Guidelines for Surveillance of Prioritized Zoonotic Diseases for Human and Animal Health in the United Republic of Tanzania

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ABBREVIATIONS

AGID	Agar Gel Immunodiffusion
AU-IBAR	African Union Inter-African Bureau of Animal Resources
CBO	Community Based Organization
CDC	Centres for Disease Prevention and Control
CMO	Chief Medical Officer
CSF	Cerebro-Spinal Fluid
DMO	District Medical Officer
DVO	District Veterinary Officer
DVS	Director of Veterinary Services
FAO	Food and Agriculture Organization of the UN
HA	Haemaglutination
HAT	Human African Trypanosomiasis
IDSR	Integrated Disease Surveillance and Response
IHR	International Health Regulations
IPD	In-Patient Department
MoLF	Ministry of Livestock and Fisheries
MoHCDGEC	Ministry of Health, Community Development, Gender, Elderly and Children
MTUHA/HMIS	Mfumo wa Ukusanyaji na Utoaji wa Taarifa za Afya – Health Management and Information System
NIMR	National Institute for Medical Research
NGO	Non-Governmental Organization
OHCEA	One Health Central and Eastern Africa
OHCD	One Health Coordination Desk
OIE	World Organization for Animal Health (Office Internationale des Epizooties)
OPD	Out Patient Department
P & R	Preparedness and Response
PCR	Polymerase Chain Reaction
PHEIC	Public Health Event of International Concern
PMO	Prime Minister's Office
RVF	Rift Valley Fever
SADC	Southern Africa Development Community
SOP	Standard Operating Procedures
TANAPA	Tanzania National Parks
TAWIRI	Tanzania Wildlife Research Institute
TVLA	Tanzania Veterinary Laboratory Agency
USAID	US Agency for International Development
VHF	Viral Haemorrhagic Fever
WHO	World Health Organization
ZVC	Zonal Veterinary Centre

FOREWORD

Zoonoses are infectious diseases that are naturally transmitted between vertebrate animals and humans. A **zoonotic** agent may be a virus, a bacterium, a parasite, a fungus, or other communicable disease agents. Many zoonotic diseases, including neglected diseases, may be more limited in terms of rapid spread, but strongly affect human and animal health, production capacity, value chains, trade and livelihoods. Zoonotic diseases affect the lives of human globally, and for this reason they are of major public health concern. Animal and human health authorities have the responsibility to control zoonoses. A coordinated approach to policies, practices and behaviour can minimize the risk of zoonotic diseases emergence and spread. Strengthened surveillance systems are required under the umbrella of One Health to ensure timely response and appropriate control.

The government of the United Republic of Tanzania, (hereafter the Government) through the Ministry of Health, Community Development, Gender, Elderly and Children (MoHCDGEC), on the one hand, and Ministry of Livestock and Fisheries (MoLF) and Ministry of Natural Resources and Tourism (MoNRT), on the other, have been taking measures to control zoonotic diseases. However, the collaboration has been limited only to a few zoonoses. The cost of response has been high, with limited resources available to support interventions.

The Government has established a coordination desk at the Prime Minister's Office – the One Health Coordinating Desk (OHCD) mandated to enhance collaboration among human, animal and environmental health sectors for the prevention and control of zoonoses, other public health threats and antimicrobial resistance using the One Health Approach. In March 2017, disease ranking was done which identified six zoonotic diseases in Tanzania. In order of priority, these diseases are: rabies, anthrax, rift valley fever - including other viral haemorrhagic fevers (Ebola and Marburg), zoonotic avian influenza, human African trypanosomiasis and brucellosis.

The Government developed this document "Guidelines for Surveillance of Prioritized Zoonotic Diseases for Human and Animal Health" to provide direction for effective integrated surveillance and response to zoonotic diseases in the country. The Guideline summarizes disease presentation in humans and animals, their documentation, analysis, /interpretation and reporting. The Guideline has also covered key aspects crucial for effective surveillance and monitoring and evaluation. These include: community based surveillance, sharing of data among sectors, dissemination of information and response. This document is in line with the National Health Security Action Plan 2016, which implements the Global Health Security Agenda (GHSA), the National Health Policy 2007, the Public Health Act 2009, the National Livestock Policy of 2006 and the Tanzania Livestock Sector Development Strategy 2010. The Guideline is intended for human and animal health experts, researchers, academia and community leaders for coordinated response to priority zoonotic diseases. It is anticipated that the Guidelines will facilitate proper planning, effective use of resources and shared responsibility among the human and animal health sectors.

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This is the first document presenting guidelines for surveillance of zoonotic diseases for the Human and Animal Health sectors in Tanzania Mainland using the One Health approach. The development of the guidelines used a consultative approach by a multi-sectoral group of experts and the first draft was produced in November, 2016, reviewed in May, 2017, finalized by a small group of experts in August, 2017 and validated by stakeholders in January 2018. Six priority zoonotic diseases, chosen using the CDC tool, are included in this guideline.

On behalf of the PMO, We would like to acknowledge the contribution of all the people who participated in the various meetings and workshops that lead to the realization of this document (See annex 19). I also acknowledge colleagues from MoHCDGEC and MoLF who provided samples of tools used in the surveillance of the selected priority diseases.

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1 INTRODUCTION

1.1. Background

Zoonoses are those diseases and infections, which are naturally transmitted between humans and vertebrate animals (WHO, 2007). Recent data show that more than 60% of human infectious diseases worldwide are caused by pathogens of a zoonotic nature, mostly originating from wildlife and having serious consequences to livestock (Morse, 2004; Jones et al., 2008). Some of the zoonotic diseases have led to major outbreaks of global pandemics like the Severe Acute Respiratory Syndrome (SARS), Highly Pathogenic Avian Influenza (HPAI), H5N1 and Pandemic Influenza A (H1N1) (World Bank, 2012; Jonas, 2013). Other zoonotic diseases, including neglected diseases, may be more limited in terms of rapid spread, but strongly affect human and animal health, production capacity, value chains and trade, and livelihoods (FAO, 2002; WHO, 2013).

Zoonotic diseases affect the lives of humans globally and pose major public health concern. Due to this, both animal and human health authorities have responsibility for the control of zoonotic diseases of increasing importance in humans and animals (FAO, 2013). This calls for the surveillance of zoonotic diseases to be undertaken under the umbrella of One Health approach. Zoonotic disease surveillance can reach its full potential when it is used to plan, implement, and evaluate responses to reduce infectious disease morbidity and mortality in human and animal populations. This is achievable through a functionally integrated human and animal health surveillance system. The attributes of this system are those which encompass the components of collection and reporting of disease outcome data. The information shall include: the populations at risk, confirmation of the etiological agents, data collection, analysis, interpretation and reporting. Dissemination of findings should be directed to those who will use the data at local, zonal, national, regional, or international levels for appropriate response. In the context of zoonotic diseases surveillance, a robust integrated zoonotic disease surveillance system is required. The system brings together and links data collection, collation, analysis, interpretation, reporting and dissemination components. Furthermore, it provides the link between human and animal clinical, epidemiological, laboratory and risk behaviour information on occurrences of zoonotic diseases in human and animal populations. It is, therefore, the purpose of this robust system to provide a framework for **“collaborative, continuous, systematic collection and analysis of data from multiple domains to detect health related events. The information obtained will facilitate interventions to attain optimal health for humans, animals and the environment”.**

1.2. Problem statement

In Tanzania, surveillance of zoonoses has been implemented separately by the human and animal health sectors, making it difficult to link control efforts. Furthermore, there are limited networks for sharing of reports between public and animal health. This shortfall has resulted in underreporting of zoonotic diseases in both human and animal surveillance systems. The situation in animal sectors needs special attention given current estimates of underreporting of up to 90% (Karimuribo et al., 2011). In the human health sector, the electronic system (Integrated Diseases Surveillance and Response - IDSR) has been introduced but it is yet to cover the whole country and other diseases. Surveillance which would incorporate recent emerging and re-emerging pathogens like Ebola, and Rift Valley Fever (RVF) is lacking and the current legislation (Policy and Acts) in the two sectors does not provide for One Health approach in the surveillance of zoonoses. Deficiencies alluded above have resulted to uncoordinated management of zoonoses, and experience has shown that weaknesses in the capacity of one country to detect and respond to emerging diseases can become a serious global threat. International organizations share the responsibility in supporting their member countries to strengthen their capability for early warning/detection and rapid response at global and national levels (FAO, OIE & WHO, 2010).

1.3. Rationale

Health threats at the interfaces of human and animal ecosystems pose risks to public and animal health. These ecosystems encompass all direct and indirect human exposure to animals and animal products. Prevention, detection, assessment, and response to pathogens transmitted through contact between humans, animals, animal source food and contaminated environment cannot be effectively addressed by one sector. Thus, continuous communication and collaboration among the sectors (human, animal and environment) responsible for health are required (FAO, OIE & WHO, 2010).

Early warning is an important aspect in the efforts to mitigate potential health threats at the human-animal-ecosystems interface. This enables decision to be made for action and timely communication between agencies and sectors responsible for human and animal health. Proper joint surveillance will help to determine what areas need additional attention for educational campaigns and control efforts. This is in line with the WHO International Health Regulations (2005) and the OIE Terrestrial and Aquatic Animal codes (OIE 2014), which aims at providing appropriate public health response to the spread of diseases.

WHO works in close collaboration with the Food and Agriculture Organization (FAO) and the World Organisation for Animal Health (OIE) - "the TRIPARTITE"- to promote cross-sectoral collaboration in addressing risks from zoonoses and other public health threats at the human-animal-ecosystem interface. This collaboration provides guidance on how to reduce these risks. In efforts to implement the Global Health Security Agenda (GHSA), Joint External Evaluation (JEE) and Performance of Veterinary Services (PVS) assessments, Tanzania is required to have a functional and real time integrated infectious diseases surveillance system to detect events of significance for public and animal health security. This includes tools for improved communication and collaboration across sectors and between sub-national, national and international levels of authority. The result is improved country and regional capacity to analyse and link data from and between surveillance systems, such as interconnected electronic reporting systems.

There is a need, therefore, to provide guidelines that will ensure that the public and animal health sectors are engaged in early warning and information exchange on status of zoonoses for their efficient and effective control and prevention.

1.4. Objectives

General objective

To provide guidance for effective integrated surveillance and response to zoonotic diseases in Tanzania.

Specific objectives

1. To develop a framework for joint surveillance system for human and animal health sectors on priority zoonotic diseases
2. To enhance timely flow of surveillance information within different levels of human and animal sectors.
3. To improve prompt sharing of data on zoonotic diseases outbreak between human and animal health sectors.
4. To enhance community participation in detection, reporting and response to zoonotic diseases.
5. To strengthen the capacity of human and animal health to conduct effective surveillance.
6. To make use of the data generated to update relevant policies, decision making, planning, prevention and control interventions and guide on future research direction.

1.5. Functions of surveillance systems

These are the main tasks which must be performed for an effective joint surveillance at each level for any health event. They include:

1. Identify cases and events: Using standard case definitions to identify zoonotic diseases, conditions and events.
2. Report suspected cases or conditions or events to the next level: If it is an epidemic/epizootic prone disease or a potential public health events of international concern (PHEIC), or a disease targeted for elimination or eradication, respond immediately by investigating the case or event and submit a detailed report to both human and animal health sectors.
3. Analyse and interpret findings: Compile the data, and analyse them for trends. Compare information with the previous periods and summarize results
4. Investigate and confirm suspected cases, outbreaks or events: Take action to ensure that the case, outbreak or event is confirmed including laboratory confirmation wherever feasible. Gather evidence about what may have caused the outbreak or event and use it to select appropriate control and prevention strategies both in humans and animals
5. Prepare: Take steps in advance of outbreaks or public health events so that response teams can act quickly and essential supplies and equipment are available for immediate action.
6. Respond: Coordinate, mobilize resources and personnel to implement the appropriate public health response.
7. Provide feedback: Encourage future cooperation by communicating with levels that provided data, reported outbreaks, cases and events about the investigation outcome and success of response efforts.
8. Evaluate and improve the systems: Assess the effectiveness of the surveillance and response systems, in terms of timeliness, completeness, flexibility, quality of information, preparedness, thresholds, case management and overall performance. Take action to correct problems and make improvement

1.6. Users of this guideline

This guideline is intended for human and animal health personnel from the national to the community levels. Users may include but not limited to:

1. Community Leaders
2. Health workers in human health sector
3. Village /Ward Livestock Extension Officers
4. Public Health Educators
5. Laboratory personnel
6. Environmental Health Officers and Sanitary Officers
7. Regional Health Management Teams (RHMTs)/Council Health Management Teams (CHMTs)
8. Health Authority (sanitary) /inspectors at ports of entry
9. Zoosanitary officers/inspectors
10. Veterinary and Wildlife Officers at all levels
11. National, Zonal, Regional and District Health Personnel
12. Research institutions
13. Training institutions
14. Public and private human and animal health service providers
15. CBOs, NGOs and Faith Based Organizations
16. Development Partners
17. International Health Regulation (IHR) Focal Points at all levels
18. General public
19. Animal disease notification focal point
20. Zonal animal disease reporting officers

2 SURVEILLANCE OF PRIORITIZED ZOONOSES

2.1. Brief description of the prioritization exercise

A zoonotic disease prioritization exercise was carried out in Tanzania in March 2017 where six zoonotic diseases were selected, namely: Rabies, Anthrax, Rift Valley Fever (RVF) and other Viral Haemorrhagic Fevers (Ebola and Marburg), Zoonotic Avian Influenza, Human African Trypanosomiasis (HAT) and Brucellosis.

The prioritization exercise entailed a workshop that used a semi-quantitative tool for prioritizing zoonoses developed by CDC (Munyua et al., 2016). The workshop brought together human, animal (both livestock and wildlife), and environmental health experts drawn from line ministries, higher learning institutions, research institutions and development partners.

Locally appropriate criteria (i.e. epidemic and pandemic potential, socio-economic impact, severity of disease in humans, presence of the disease in the country or neighbouring countries and feasibility of interventions) were developed and used to rank diseases guided by the tool.

2.2. Priority Zoonotic Diseases

2.2.1. Rabies

Rabies is caused by Lyssavirus and it affects all mammals. Domestic dogs are the most important maintenance hosts although other carnivores may be involved as non-maintenance populations (Lembo *et al.,* 2010). In Tanzania rabies is endemic causing an estimated 1499 annual deaths (Cleaveland *et al.,et al.,* 2010; Mazigo, 2015; Kipanyula, 2015.

In most human cases, the disease is transmitted through the bite of rabid animals, which shed infectious virus with their saliva. The virus enters the body through transdermal inoculation (i.e. wounds) or direct contact of infectious material (i.e. saliva, cerebrospinal liquid, nerve tissue) to mucous membranes or skin lesions. Human-to-human transmission through bite is possible but rare. In rare cases, rabies may be contracted via transplantation of an infected organ. Ingestion of raw meat or other tissues from animals infected with rabies is not a source of human infection.

Mass vaccination campaign in dogs is the main control measure used to control rabies infection in both human and animals. However, pre-exposure vaccination for high risk groups (veterinarians and human health workers, rabies vaccinators and laboratory workers) is done to protect them from being infected by contact with contaminated material during their work. Post exposure prophylaxis is given to patients with history dog bites. Other control methods include elimination of stray dogs and restriction of contact between domestic and wild dogs. Surveillance matrix for rabies is indicated in Table 1.

Table 1: Surveillance matrix for rabies

	HUMAN	ANIMAL
Identification/detection of cases	**Standard case definition** **At community level:** any person dies and has history of animal bite. **At health facility**: history of animal bite, fever, mental confusion, fear of water (hydrophobia), altered consciousness or death.	**Standard case definition** **Suspected case** When animals change in behaviour (aggression, unprovoked attack, inability to swallow, excessive salivation, hydrophobia, paralysis) are observed in 2 to 45 days after the animal is exposed (bitten) by another animal **Confirmed cases** Detecting antibodies for rabies virus and Negri bodies in the brain of the suspected animal.
Surveillance strategy/ methods	Reports from the community (community health workers, media, traditional healers, influential/ political leaders Reports from the clinical case	**Passive surveillance** Observation and reports from animal keepers, livestock field officers, public/animal health service providers, rangers and veterinarian
Threshold	One (1) case	One (1) case
Laboratory investigation (Biosafety level 2-3)		
When and where to collect Samples	During illness with rabies signs and symptoms or after death	Rabies case (ante mortem) or dead body (post mortem)
Samples required	Brain tissue; cerebral spinal fluid, saliva, blood, skin tissues, urine, tears	Brain tissue
Transportation and Storage of samples	Cold chain	Cold chain
Type of test	Fluorescent antibody test (FAT) on brain tissue Histopathology: Negri bodies (Intracytoplasmic inclusion bodies in the hippocampus) -Enzyme-linked immunosorbent assay (ELISA) -Molecular tests (eg. PCR)	Direct rapid Immunohistochemistry Test (DRIT), FAT Histopathology: Negri bodies (Intracytoplasmic inclusion bodies in the hippocampus) -Molecular tests (eg. PCR)

2.2.2. Anthrax

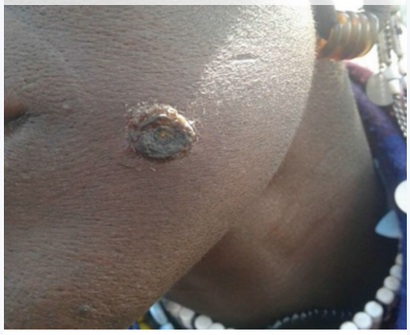
Anthrax is an acute/per acute bacterial zoonotic disease which affects livestock, wildlife and humans. The disease is caused by *Bacillus anthracis,* a Gram positive rod shaped bacterium, the spores of which contaminate the soil.

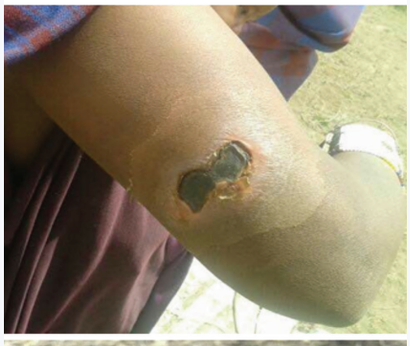
In Tanzania, outbreaks have been reported in livestock (cattle, goats and sheep), and in wildlife species (wildebeest, buffalo, impala, giraffe, Thomson gazelle, hippopotamus and elephant) in Serengeti National Park and Ngorongoro Conservation (Lembo *et al.,* 2011). Outbreaks of the disease in humans have also been reported (Lembo *et al.*, 2011, Mwakapeje *et al* 2018). Hospital records for human cutaneous, and neonatal anthrax are available

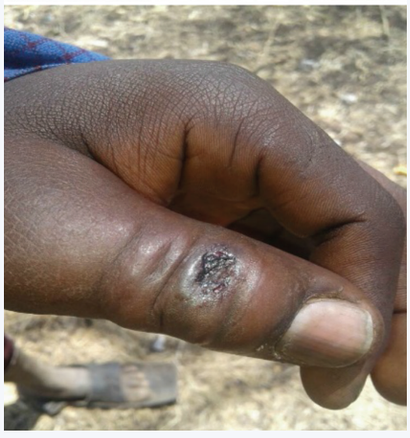
In humans, transmission is through direct or indirect contact with an infected animal and occupational exposure (eg. inhalation of spores) emanating from contaminated animal products (eg. skins and hides). Transmission in animals is through ingestion of pastures contaminated with spores, especially during dry season.

Anthrax signs in animals

Anthrax signs in humans







Practices exposing human to infection

Picture Source: FAO/Ernest Ebilate

In humans, anthrax is treated by using antibiotics. In domestic animals control is through vaccination, rapid detection and reporting, quarantine, treatment of in contact animals and proper disposal (burning, burial) of dead animals. Wildlife areas, with hands-off management policies, exert anthrax control measures during emergency situations, or when endangered species are threatened. Surveillance matrix for anthrax is detailed in Table 2.

Table 2: Surveillance matrix for anthrax

	HUMAN	ANIMAL
Identification/ detection of cases	**Standard case definition** **At community level**: Any person with fever, difficulty in breathing, skin conditions or abdominal pain or altered consciousness, in a person with history of contact with sick or dead cow, goat or sheep **At health facility:** Acute onset of illness, characterized by several clinical forms. (a) localised form: cutaneous: skin lesion evolving from a vesicular stage, to a depressed black eschar. (b) systemic forms: (sporadic) - gastro-intestinal: abdominal distress characterized by nausea, vomiting, anorexia and fever. - pulmonary: acute respiratory illness, hypoxia, dyspnoea and high temperature, with X-ray evidence of mediastinal widening. - meningeal: acute onset of high fever, convulsions, loss of consciousness, meningeal signs and symptoms; commonly noted in all systemic infections. **Confirmed case:** Laboratory confirmation of *Bacillus anthracis* from a clinical specimen	**Standard case definition** Anthrax is suspected when sudden death of an animal occurs and/ or oozing dark unclotted blood from natural orifices **Confirmed cases:** Anthrax is confirmed when *Bacillus anthracis* is detected from a clinical specimen of suspected animal
Surveillance strategy/ methods	Reports from the community (community health workers, media, traditional healers, influential/ political leaders) Reports from the clinical management at the health facility Active case search during outbreaks	**Syndromic/passive surveillance:** Observation and reports from livestock keepers, extension officers, private/public animal health service providers, rangers or veterinarian **Conduct outbreak investigation**
Threshold	One (1) case	One (1) case
Laboratory investigation (Biosafety level 2-3)		
When to take Samples	Suspected febrile admissions Showing either localised form or systemic signs, pulmonary signs and meningeal signs.	Animal died suddenly and un-clotted blood oozing from natural orifices
Samples required	Blood smear; blood sample; cerebrospinal fluid; pleural fluid and stool	Blood smear, blood sample, environmental samples (contaminated soils)
Type of test	Microscopic examination of stained smears Culture Serology Molecular tests (PCR)	Microscopic examination of stained smears Culture Serology Molecular tests (PCR)

2.2.3. Rift Valley Fever and Other Viral haemorrhagic Fevers (Marburg and Ebola)

Rift Valley Fever is an arthropod borne zoonotic disease caused by Phlebovirus. The virus survives in dormant eggs of Aedes mosquito for long periods buried in the dust until they are awakened by heavy rains that mainly follows severe draughts. The newly hatched mosquito inject the virus in animals during feeding. During epidemic cycles, *Culex* mosquitoes and other biting insect populations may serve as secondary vectors.

Humans are infected through contact with blood or body fluids of infected animals. This can happen during slaughter, handling of infected animals, food preparation and consumption of improperly cooked meat and/or inadequately boiled milk from infected animals. Mosquito bites have also been shown to be a route of transmission to humans.

In humans, prevention is through proper handling and cooking of meat, good biosafety practices (eg. hygiene, including hand wash and use of personal protective equipment), and biosecurity (avoiding contact with sick and suspected animals) as well as vector control and public education in affected areas. For prevention in animals it is important to restrict movements, eliminate/reduce vector populations by draining breeding sites and using of insecticides/larvicides and animal vaccination.
Surveillance matrix for RVF is shown in Table 3.

Table 3: Surveillance matrix for RVF

	HUMAN	ANIMAL
Identification/ detection of cases	**Standard case definition** **At community level**: Any person with mild or severe fever presenting with unexplained bleeding or who died after an unexplained fever and bleeding. **At health facility** : A person of any age presenting with mild/ severe fever, general body malaise, headache, bleeding from nose, gums, vagina, skin or eyes and vomiting blood, impaired consciousness and history of direct contact with sick or dead animals or the animal products; or direct contact with body fluids of an infected person; or resident in, or who recently travelled to an area where RVF activity in animals or humans was confirmed. ***A probable case:*** A suspected case that presented with unexplained bleeding (bloody stool, vomiting blood, coughing blood, bleeding from gums, nose, vagina, skin,	**Standard case definition** **At community level:** _ Suspected when high mortality rate in young animals and massive abortions at any stage of gestation (cattle, sheep and goat and camel) following heavy rains or flooding effect **Suspect herd**: A suspect herd will be any herd of cattle, sheep, goats or camels in which there are unusually high levels of abortion (e.g. in which 10% or more of currently pregnant animals suffer from abortions), an unusually high rate of still birth (e.g. in which 10% or more of pregnant animals give birth to dead offspring, or offspring that die soon after birth), OR an unusually high mortality rate, particularly in young animals (e.g. death of 10% or more of this year's young stock). The suspect outbreak will be considered to have started from the first abortion, stillbirth or death that occurs following a period of unusually heavy rain in the household location. Element of timeframe since unusually heavy rainfall is very important for RVF case definition. A "**herd** or **flocks**" is defined as (i) a discrete group of animals owned by a single person or family that is kept together in a coherent unit and infrequently intermingle with other "herds or flocks" or (ii) a loose collection of smaller groups of animals that are owned by a variety of owners but live in close proximity to each other in the same "hamlet/villages/wards" and intermingle frequently or at will (i.e. communal grazing).

	or eyes), deterioration of vision, or decreased consciousness. ***A confirmed case:*** Any suspected or probable case with laboratory confirmation of RVF	A "**Confirmed RVF positive Herd/ Flock**" is defined as a suspect herd in which at least one animal has laboratory evidence of current or recent RVFV infection using one of the following laboratory tests: i. IgM positive serology ii. Demonstration of RVFV by PCR in either blood or tissue iii. Demonstration off RVFV by virus isolation in either blood or tissue **Confirmed cases:** Detection of RVF virus, antigen or antibody (IgM), from a suspected animal Detection of IgG or IgM in animals during sero-surveillance
Surveillance strategy/ methods	Reports from the community (community health workers, media, traditional healers, influential/ policy makers) Reports from the clinical management at the health facility Active case search during outbreaks	**Syndromic/passive surveillance:** Observation and reports from livestock keepers, extension officers, private/public animal health service providers, rangers or veterinarian. - vector surveillance - sentinel surveillance - sero-surveillance
Threshold	One (1) case	One (1) case
Laboratory diagnosis (Biosafety level 3)		
When and where to collect samples	Any case that meets the standard case definitions	Aborted foetus, febrile animals during outbreak investigation and random sampling during sero-surveillance
Samples required	Blood, plasma/ serum, cerebrospinal fluid, tissues	Blood sample, aborted foetus tissues:, spleen, lymph nodes, liver and brain
When to collect	During illness	During outbreak investigation/ active surveillance
Sample transportation and storage	Triple package in cold chain	Triple package in cold chain
Type of test	- Virus isolation in cell culture - Antigen and antibody detection - Immunohistochemistry, ELISA, both IgM and IgG antibodies are specific to RVF virus - Molecular techniques (PCR)	- Virus isolation - Antigen and antibody detection ELISA, both IgM and IgG antibodies are specific to RVF - Molecular techniques (PCR).

Marburg haemorrhagic fever (Marburg HF) is a severe haemorrhagic fever caused by the Marburg virus, which affects humans and non-human primates. Primates can become infected with the Marburg virus, and may develop serious disease with high mortality. The reservoir host of the virus is the African fruit bat, *Rousettus aegyptiacus*.

The Marburg virus is transmitted from its animal host to humans via direct contact with bat fluids. Unprotected contact with bat faeces or aerosols are the most likely routes of infection. Transmission also occurs through person-to-person contact with droplets or body fluids of infected persons, or contact with equipment and other objects contaminated with infectious blood or tissues. Nosocomial transmission is not uncommon in homes or in hospitals.

Ebola is caused by infection with a virus of the family Filoviridae, genus *Ebolavirus*. There are five identified Ebola virus species, four of which are known to cause disease in humans including Ebola virus (*Zaire ebolavirus*); Sudan virus (*Sudan ebolavirus*); Taï Forest virus (*Taï Forest ebolavirus*, formerly *Côte d'Ivoire ebolavirus*); and Bundibugyo virus (*Bundibugyo ebolavirus*). The fifth, Reston virus (*Reston ebolavirus*), has caused disease in non-human primates. The natural reservoir of the Ebola virus remains unknown, however, it is believed that fruit bats are the most likely reservoirs. The disease is transmitted to people from the animals and subsequently, between humans.
In humans, Ebola is transmitted by contact of the virus with broken skin or mucous membranes, such as the eyes, nose, or mouth with infected blood or body fluids (eg. urine, saliva, sweat, faeces, vomit, breast milk, and semen), contaminated objects (like needles and syringes) and or infected fruit bats or primates (apes and monkeys).

Preventive measures include avoiding fruit bats, and sick non-human primates. Prevention of person-to-person transmission can be achieved by preventing direct physical contact with infected persons. Wearing of protective equipment (gowns, goggles, masks, gloves, hoods and boots) is mandatory. The infected individual must be kept under strict isolation; and disposal of needles, equipment contaminated with patient excretions must be done by sterilization or other appropriate means under strict supervision. Surveillance matrix for Marburg HF and Ebola is indicated in Table 4.

Table 4: Surveillance matrix for Marburg HF and Ebola

	HUMAN	ANIMAL
Identification/ detection of cases	Standard case definition Patient who had recent contact with potential reservoir animals (bats and non-human primates) or Patient who recently cared for a patient in a Marburg and Ebola infected area **At health facility:** fever, sore throat, chest pain, difficulty breathing, difficulty swallowing, external and internal bleeding **At community level:** History of disease in humans; and contacts with / consumption of potential reservoirs (bats and non-human primates). At port of entry (boundary)	

	Screen for incoming travellers for signs of disease using (i) traveller declaration forms (ii) thermal imaging cameras i. Fill in the Marburg/Ebola viruses recording document (register/book/form) ii. Report to higher levels iii. Share information with the relevant authority and stakeholders (animals and wildlife handlers and communities)	
Threshold	One (1) case	NA
Laboratory diagnosis (Biosafety level 4)		
	Serology: capture IgM ELISA and IgG ELISA (PCR)- Virus isolation by cell culture	Serology : capture IgM ELISA and IgG ELISA PCR - Virus isolation by cell culture

2.2.4. Zoonotic Avian Influenza

Avian influenza (AI) is a fatal viral disease of birds and humans caused by zoonotic agents that belong to the *Influenza Virus A* genus. AI viruses are classified by a combination of two groups of proteins: hemagglutinin or "H" proteins, of which there are 16 (H1–H16), and neuraminidase or "N" proteins, of which there are nine (N1–N9). They are further classified by their ability to produce disease, or pathogenicity, in domestic chickens. Highly pathogenic avian influenza (HPAI e.g. H5N1 and H7N9) strains are extremely infectious, often fatal to domestic poultry, and spread rapidly. Low pathogenic avian influenza (LPAI) strains occur naturally in wild migratory water fowl and shorebirds without causing illness.

Infected birds can shed avian influenza A viruses in their saliva, nasal secretions, and faeces. Susceptible birds become infected when they have contact with the virus as it is shed by infected birds. They also can become infected through contact with surfaces that are contaminated with virus from infected birds.
Transmission to human is mainly via oral route of food items contaminated by faeces from infected birds however, the majority of recent human cases of A (H5N1) and A (H7N9) infection have been associated with direct or indirect contact with infected live or dead poultry.

In humans prevention is through good biosafety (eg hygiene including hand wash and use of personal protective equipment) and biosecurity (avoid contact with sick and suspected birds and their environment). Control of AI in domestic birds is through practice of good biosecurity and hygiene, (preventing contact with other domesticated or wild birds, mechanical vectors and fomites including water sources). All-in and all-out flock management is helpful in poultry flocks and birds should not be returned to the farm from live bird markets or other slaughter channels. In addition, depopulation of infected flocks, combined with other measures such as movement controls, quarantines and perhaps vaccination. Insect and rodent control, disposal of contaminated material, and thorough cleaning and disinfection. Surveillance matrix for zoonotic avian influenza is shown in Table 5.

Table 5: Surveillance matrix for Zoonotic Avian Influenza

	HUMAN	ANIMAL
Identification/ detection of cases	Standard case definition **Community Case Definition:** Any person with mild or severe fever and flue like symptoms and difficulty in breathing. **Health facility - syndromic Influenza Like Illness (ILI) case definition:** An acute respiratory infection with measured fever of ≥ 38 C° and cough; with onset within the last 10 days. **Severe Acute Respiratory Infection (SARI) case definition:** An acute respiratory infection with: History of fever or measured fever of ≥ 38 C° and cough; with onset within the last 10 days; and requires hospitalization During outbreak: Any person presenting with unexplained acute lower respiratory illness with fever (>38°C) and cough, shortness of breath or difficulty breathing AND One or more of the following exposures within seven days prior to symptom onset: Close contact (within one meter distance) with a suspected, probable or confirmed person or animal (e.g. caring for, speaking with, or touching)	Standard case definition **Suspected case** Sudden death with high mortality in domestic and wild birds with or without respiratory signs **Screening** : Detection of HI and HA and neuraminidase during sero-surveillance **Confirmed case** Detection of avian influenza virus or antigen from a suspected bird
	Confirmed case: A person meeting the criteria for a suspected case AND positive laboratory results from a certified laboratory. **Suspected pandemic (H5N1) 2009 virus infection:** An individual presenting with influenza-like-illness (sudden onset of fever >38°C and cough or sore throat in the absence of another diagnosis) with a history of exposure to a pandemic (H1N1) 2009 virus**.** **Confirmed pandemic (H1N1) 2009 virus infection:** An individual with a laboratory-confirmed pandemic (H1N1) 2009 virus infection by one or more of the following tests shown under Lab Diagnosis (below)	
Surveillance strategy/method	Reports from the community (community health workers, media, traditional healers, influential/ political leaders) Reports from the clinical management at the health facility Active case search during outbreaks	Active surveillance - Risk-based surveillance - Participatory disease search (PDS) - sentinel surveillance, - passive surveillance
Threshold	One (1) case	One (1) case
Laboratory diagnosis (Biosafety level 3)		
Where and when to collect samples	Human case with clinical signs and symptoms who fulfil the above standard case definition	Sample suspected birds during outbreak investigation and random sampling during sero-surveillance

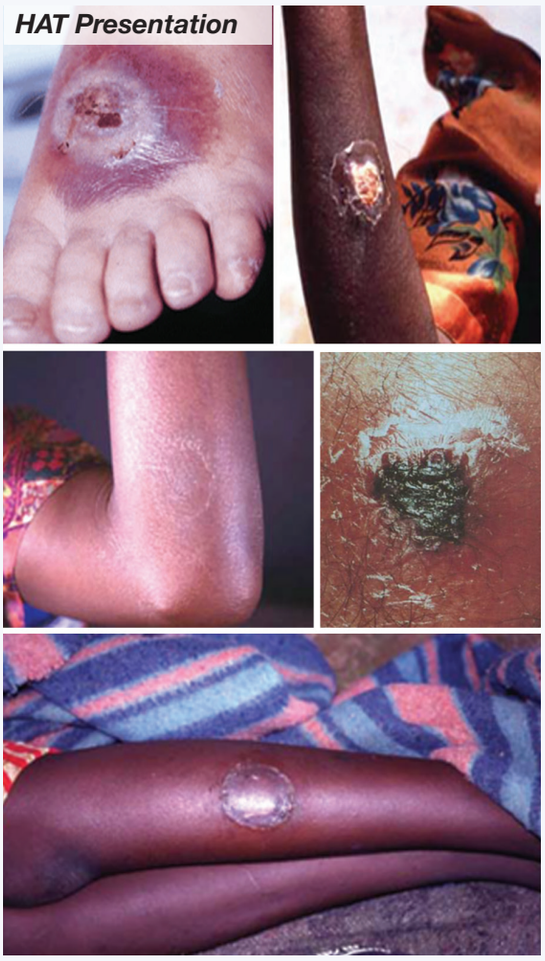
Samples required	Swab from the nose or throat	Cloaca and choannal swabs collected in Viral Transfer Media (VTM) and blood/sera.
When to collect the samples	Suspected case that fits standard case definition	During outbreak investigation/ active surveillance
Transport and storage	Cold facility	Cold chain
Type of test	- PCR - Viral culture - 4-fold rise in pandemic (H1N1) 2009 virus-specific neutralizing antibodies	- Haemaglutination (HI and HA) and neuraminidase inhibition tests - Molecular test (PCR) - Rapid field test - AGID test

2.2.5. Human African Trypanosomiasis (Hat)

Human African Trypanosomiasis (HAT), or acute human sleeping sickness, is a tsetse fly borne disease of vertebrate animals, including humans, in sub-Saharan Africa. The disease is caused by two subspecies of the parasite *Trypanosoma brucei namely: T. b. rhodesiense (t.b.r)* and *T. b. gambiense (t.b.g).* The former is endemic in Tanzania's western and northern regions of Kigoma, Katavi, Rukwa, Tabora and Manyara, Arusha and Mara regions respectively. The latter is found in 24 countries in West and Central Africa. About 98% of reported cases of HAT in Africa are of the *T. b. gambiense* form. HAT will eventually lead to coma and death if left untreated**.**

Animals can host the human pathogen parasites, especially *T. b. rhodesiense*, of which domestic and wild animals are an important reservoir. Animals can also be infected with *T. b. gambiense* and act as a reservoir to a lesser extent. However, the precise epidemiological role of the animal reservoir in the gambiense form of the disease is not yet well known.

Effective entomological and parasitological surveillance and control systems are important in sustaining HAT control interventions. In addition, the availability of appropriate diagnostic tools and timely treatment of humans are important. Strengthening of capacity to sustain surveillance in the rural areas is vital in reducing mortality and improving health condition of both animals and humans. Surveillance matrix is detailed in Table 6.



Picture Source: MoHCDGEC, Tanzania

Table 6: Surveillance matrix for HAT

	HUMAN	ANIMAL
Identification/ detection of cases	**Standard case Definition:** Patient living in tsetse infested area with localized swelling/large sore (chancre) at the site of the tsetse fly bite. **Early stage** (haemo-lymphatic stage): - Presentation: Bouts of fever, headaches, joint pains and itching. Could be also be asymptomatic. **Late stage** (neurological or meningo-encephalic stage): - Presentation: Behaviour change, confusion, sensory disturbances, poor coordination and disturbance of the sleep cycle.	**Standard case definition** As observed by farmers and or field officers (*T. brucei brucei)* - Primary clinical signs: intermittent fever, lymphadenopathy, signs of anaemia, progressive weight loss. Decreased milk yield in dairy animals. - Signs in reproduction system: Abortion, premature births and perinatal losses, testicular damage in males. - Other signs: oedema, cardiac lesions, diarrhoea, keratitis, lacrimation.
Surveillance strategy/ methods	-Reports from the community (community health workers, media, traditional healers, influential/ political leaders) -Reports from the clinical management at the health facility -Active case search during outbreaks -Entomological infection rates	Active surveillance Passive surveillance Vector surveillance
Threshold	One (1) case	N/A
Laboratory diagnosis (Biosafety level 2)		
When and where to collect samples	HAT cases with clinical signs and symptoms	HAT case with clinical signs and symptoms
Samples required	Blood, CSF, lymph node fluid, other tissues or biopsy of a chancre.	Blood, lymph nodes smear
When to collect	As soon as possible when early signs and symptoms show.	As soon as possible with early signs and symptoms
Storage	Cold facility	Cold facility
Type of test	Microscopy of thick or thin films of blood, lymph nodes or other tissues Microscopy of CSF fluid. Central nervous system involvement confirmed if there is increased protein in cerebrospinal fluid and a white cell count of more than five. Serology is not used for the *T.b.r.* form, but used for screening of *T.b.g.* Definitive diagnosis of *T.b.g* also rests on microscopic observation of the parasite.	- Thick or thin films of blood, lymph nodes or other tissues - Animal inoculation studies in rats or mice - In vitro cultivation - Polymerase chain reaction (PCR) assays - Serology - indirect fluorescent antibody test (IFAT) and enzyme-linked immunosorbent assays (ELISA)

2.2.6. Brucellosis

Brucellosis is a contagious bacterial zoonotic disease which affects livestock, wildlife and humans (OIE, 2009). In animals mainly cattle, the disease is characterized by late term abortion, infertility and reduced milk, calf crop production as a result of retained placenta and secondary endometritis leading to considerable productivity losses. In humans the disease is debilitating which ends up in permanent injury and disabling sequel that leads to financial loss attributable to medical expense and loss of working hours. The disease is caused by gram-negative coccobacillae belonging to the genus Different *Brucella* species have preferential hosts eg: *B. abortus* (cattle, bison), *B. suis* (swine), *B. melitensis* (sheep and goats) *B. canis* (dogs), *B. ovis* (sheep) and *B. neotomae* (rodents) (Foster et al., 2007; Xavier et al., 2010). Three species including B*. melitensis, B. abortus and B. suis* are of great zoonotic potential and are the ones known to be prevalent in Tanzania (Assenga et al., 2015).

In humans, infection frequently occurs through consumption of unpasteurized milk, dairy products, blood and meat from infected animals, by inhalation, through cuts and abrasions or by droplet infection of the eyes (OIE, WHO, Kurdoglu et al., 2010). The disease can also be acquired during occupational contact with infected animals and their discharges, particularly at calving but also during slaughter if the uterus is broken.

Brucellosis in animals and risk practices

Source: FAO/Moses OleNeselle

Transmission of *Brucella* spp. between domestic animals usually takes place through contact with aborted foetus, infected material, most commonly through ingestion of contaminated pasture, water and feeds. Transmission of brucellosis in the terrestrial wildlife happens through a spill over of infection from domestic animals and a sustainable infection in wild species (Shirima, 2005, Fyumagwa et al., 2009; Godfroid et al, 2011, Assenga et al., 2015, Mngumi et al, 2016).

In humans brucellosis is prevented through control and elimination of disease in animals by vaccination and culling of infected animals and reduced risk of infection by personal hygiene, adoption of safe working practices (eg use protective gears when attending animals), protection of environment and food hygiene (eg pasteurization of milk and milk products) (WHO, 2006). Surveillance matrix for brucellosis is shown in Table 7.

Table 7: Surveillance matrix for brucellosis

	HUMAN	ANIMAL
Identification/ detection of cases	**Standard case definition** **At community level**: continuous intermittent fever of variable periods in humans with history of contact with animals or their products **At health facility**: Acute or insidious onset, continuing intermittent fever of variable period (undulant fever), night sweats, fatigue, anorexia, weight loss, headache, arthralgia and generalized muscle aching water (hydrophobia), altered consciousness or death. History of late pregnancy abortion in animals.	**Standard case definition** Brucellosis is suspected when abortion/ abortion storm occurs in the last trimester of pregnancy in a livestock herd and hygroma **Confirmed cases** Brucellosis is confirmed when *Brucella* spp. are detected from a specimen of suspected animal
Surveillance strategy/methods	Reports from the community (community health workers, media, traditional healers, influential/ political leaders) Reports from the clinical management at the health facility Active case search during outbreaks	**Passive /Syndromic surveillance:** Observation and reports from livestock keepers, extension officers, private / public animal health service providers, rangers or veterinarian Syndromic and risk based screening **Mass screening/ active surveillance**
Threshold	One (1) case	Massive abortion in advanced pregnancy
Laboratory diagnosis (Biosafety level 2-3)		
Specimens required	Blood	Blood, placenta, milk, vaginal swabs
When to collect	During illness	When there is history of abortion, mass screening
Storage	Cold facility	Cold chain facility
Type of test	Rose Bengal Plate test (RBPT) **screening**; Rivanol Precipitation **Test Confirmation**: Molecular test (eg. PCR) Culture and isolation of bacteria	RBPT screening and ELISA confirmation -Molecular test (eg. PCR) -Culture and isolation of bacteria

3 DATA RECORDING, ANALYSIS AND REPORTING

3.1. Recording

Recording is one of the key components of any surveillance system. This involves documentation of cases/events identified/detected using a standardized tool which may include registers and forms (Annexes 1 to 17, Table 8) in printed or electronic format.

In human disease surveillance, daily recording is done at the health facility/district level and port of entry (PoE), by health staff, or at the community level. Key responsible personnel include: Clinicians at Out-Patient Departments (OPD)/In-Patient Departments (IPD), technician at the laboratory, clinicians responsible for outbreaks at Outbreak Camp Sites, and community health workers.

In animal health, primary recording of cases is done at the farm level, village/wards, veterinary practice facilities, zoosanitary border posts, check points, slaughter facilities, livestock markets, district livestock offices and zonal veterinary centres. Key responsible personnel include: extension officers, meat inspectors, zoosanitary inspectors, private practitioners, district veterinary officers, zonal veterinary officers and the Director of Veterinary Services. In wildlife documentation starts from park warden, wildlife veterinarian, district and zonal veterinary centres and the Director of Veterinary Services.

Registers/forms for recording

In the public health sector, information recorded in the specific in-patient and out-patient registers registers/forms include, among others, presumptive/suspected diagnosis, demographic and geographical/locality and laboratory results. For the non-outbreak prone diseases, in this case (HAT, brucellosis) seen in the OPD, presumptive diagnosis is recorded in the front registry in MTUHA Book 5 in a section titled *"Sehemu ya Kawaida"* (Annex 1).

For outbreak-prone diseases (Anthrax, Avian Influenza, Rabies/Animal bites, Rift Valley Fever and other Viral Haemorrhagic Fevers (VHF) seen in the OPD, presumptive diagnosis is recorded in the back of the registry (MTUHA Book 5) in a section titled *"Sehemu ya Magonjwa yanayotolewa Ripoti"* (Annex 2) and in case of establishment of Case Treatment Centre/camp recording is done in a Linelist Register. For all reportable disease cases seen in the IPD, presumptive diagnosis is recorded in the IPD registry (Annex 3).

In animal health, information may be recorded in the FAO Comprehensive Animal Diseases Surveillance Form (Annex 8). Other tools deployed by the Ministry of Livestock and Fisheries include: Animal Field Investigation Form/Report (Annex 9 and 10), Clinical Examination Form (Annex 11), and Blood sample Collection Form (Annex 12). When samples are sent to the laboratory, they have to be accompanied with the Laboratory Sample Submission Form (Annex 13). Field Investigation Preliminary Report for Animal Owner/Manager (Annex 14), Animal Disease Surveillance Field Investigation Report (Annex 15) and Veterinary Services Abattoir Report (Annex 16).

For reporting a disease outbreak in case of Rift Valley Fever and other VHFs, tools to be used are given at different levels namely, household, individual and animal (Annexes 6, 7 and 17 respectively).

Table 8: Surveillance record tools and users

Tool	User	Information to be recorded/collected
a) Standard Health Facility Register (MTUHA) (Annex 1, 2, 3)	Clinician	Date demographics - symptoms/signs - lab test and results - diagnosis - treatment
b) Laboratory registers/forms (Annex 12, 13 and 17	Laboratory analyst	Date, demographic, type of test, sample taken, results,
c) Linelist in case of outbreaks	Clinician, surveillance officer, nurses	Date demographics - symptoms/signs - lab test and results - diagnosis - treatment - risk factors
d) Case Notification Forms	Clinician, nurse, laboratory analyst, surveillance officer	Patient history and examination, demographics - symptoms/signs, risk factors - lab test and results - diagnosis - treatment
e) Form for weekly reporting of new cases/deaths at the district/health facility (Annex 4)	In charge of health facility	Disease Number of cases for each disease by age group (<5, >5) and sex (M/F) Total number of cases for the week
f) Logbook of Rumours (Annex 5)	Surveillance officers at all levels	Rumours of any suspected disease or event, date, and place
g) Community Surveillance Forms	Community health worker	Disease or health event, symptoms, date, and place
h) Animal Disease Surveillance Form (Annexes 8,15)	Village/ward/district livestock field/veterinary officers	history and examination, demographics - symptoms/signs, risk factors - tentative diagnosis - prevention/control measures
i) Abattoir Form (Annexes 8 and 16)	Meat inspectors/veterinary officers	- symptoms/signs, lesions and tentative diagnosis
j) Outbreak Investigation Form and reporting template (Annexes 9, 10, 11 and 14)	Village/ward/district livestock field/veterinary officers	history and examination, demographics - symptoms/signs, lesions, risk factors - samples taken - tentative diagnosis - prevention/control measures
k) Laboratory Sample Submission Form (Annex 13)	Village/ward/district livestock field/meat inspectors, veterinary officers, laboratory technologists	history and examination, demographics - symptoms/signs, lesions-type of sample, preservation modality, tentative diagnosis
l) Post-mortem Form Annexes 8	Village/ward/district livestock field/meat inspectors, veterinary officers, laboratory technologist	history and examination, demographics - symptoms/signs, lesions-type of sample, preservation modality, tentative diagnosis

3.2. Reporting

Disease reporting entails providing information/data on disease to enable follow-up of cases and to help identify outbreaks. Disease reporting should be conducted in a timely manner particularly for those diseases requiring immediate interventions. It provides a better understanding of disease trends to enable appropriate decision making, supporting programs by allocating resources and policy making. Reporting surveillance data throughout the system also enables evaluation of the effectiveness of interventions and response.

In the public health system, reporting usually starts at the health facility, where the diseases or health events are recorded by health care workers (HCWs) on patient cards, registers (MTUHA) or other data collection tools upon provision of care. Patient data are aggregated using tally sheets and reported through weekly or monthly summary forms. Each facilities submit summary forms to the district level, where all data are entered in the DHIS system. From there, data are accessible to regional, programme and national-level health personnel. Information may also originate from the community through observation of suspected disease cases, deaths or other events. These are recorded on logbook of rumours or community surveillance forms by community health workers or surveillance officers, and reported to the nearest health facility. The health facility has an obligation to investigate the reported cases before reporting to higher levels. Whatever the source of information, reporting to higher levels should be done timely especially for notifiable diseases. The National Livestock Policy of 2006 provides for veterinary services, including animal disease reporting that complies with the World Organization for Animal Health (OIE) standards. Furthermore, the Animal Disease Act, No 17 of 2003 requires reporting of animal disease of any cause, which is not apparent. The owner of the animal shall, within 24 hours, report the matter to the nearest paraprofessional/veterinarian and the same shall have a duty to report the matter to the veterinary authority at district level after receiving a report from the owner.

Initial reporting start at community level where farmers report sick animal cases to the extension officer who should prepare and submit the disease surveillance form to the District Veterinary Officer (DVO). In turn the DVO reports to the Zonal Veterinary Centre (ZVC). After scrutinizing and validating the reports, ZVC will forward the report to the National Epidemiology Unit that report to the DVS. For the case of notifiable diseases, ZVC is required to report directly to the Director of Veterinary Services (DVS).

The DVS office communicates to the regional and international bodies such as OIE, AU-IBAR, SADC, FAO and other stakeholders upon confirmation of the case. Various institutions such as TAWIRI, TANAPA, College of Veterinary and Biomedical Sciences of SUA, and private veterinary service providers are required by the Animal Disease Act of 2003 to report disease incidences to the Veterinary Authority.

Types of reporting

Three types of reporting exist; namely: immediate, weekly and monthly.

1) **Immediate Reporting:**
   Immediate reporting is required when an epidemic-prone zoonotic disease or other potential public health event of international concern (PHEIC) is suspected or if otherwise required under the International Health Regulations and OIE Terrestrial Animal Health Code. The diseases, conditions and events requiring immediate notification to the next level once they happen are listed in Table 9.

Table 9: List of immediate reportable zoonotic priority diseases

Disease category	Disease/condition/event	Threshold for suspecting outbreaks (Number of cases)
Zoonotic Epidemic-Prone Diseases to be reported immediately	Anthrax	1
	Rabies/animal bite	1 (Rabies) Cluster Cases for Bites
	Rift Valley Fever and other Viral haemorrhagic fevers	1
	Human influenza caused by a new subtype	1/at least 3 Cluster Cases for SARI

2) Weekly reporting:

All health facilities and district veterinary offices, Points of Entry (PoE) and any other location must report the total number of cases and deaths seen on - weekly basis. The totals are analysed and the results used to monitor progress toward disease reduction targets, measure achievements of disease prevention activities in the district, and identify hidden outbreaks or problems so that early action can be taken. Reporting of weekly diseases is based on aggregated number of cases/deaths, <5 or ≥ 5 and Male vs Female. For humans, when reporting electronically, weekly summary paper form (Annex 4, from IDSR Guideline) must be filled before reporting by phone. Table 10 shows zoonotic diseases to be reported on weekly and monthly basis:

Table 10: Frequency of reporting for IDSR and animal diseases surveillance for priority zoonotic diseases

Frequency of reporting	Diseases/Condition
Zoonotic Priority diseases to be reported weekly. These are zoonotic diseases of public health importance For humans, reporting is done every week on Monday by 3.30 pm and for animal health, every week on Friday by 3.30 pm	➔ Anthrax ➔ Rabies/Animal bites ➔ Brucellosis ➔ Viral haemorrhagic fevers ➔ Human influenza caused by new subtypes ➔ HAT

The District is contacted immediately if epidemic threshold has been reached

3) Zero reporting

The term “zero reporting” applies to “weekly report when none of the priority zoonotic diseases has been identified during the week. For the higher level staff to be certain that no disease is present; they need to receive a weekly report from every facility. A number must appear for each disease on the form, even if that number is “zero.”

4) Outbreak Reporting

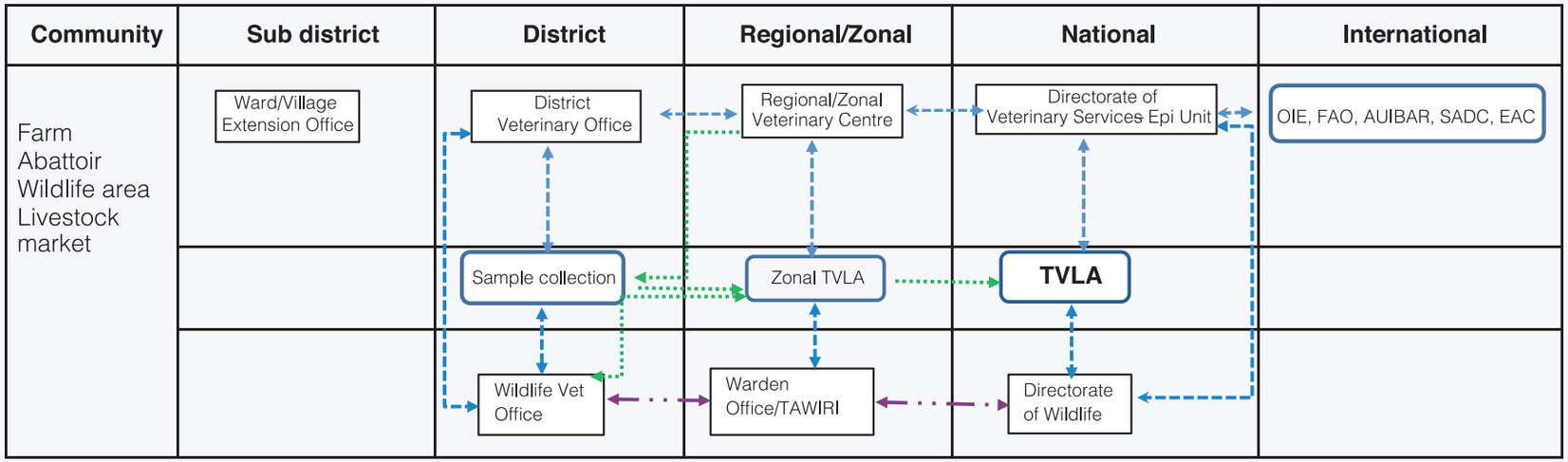
For ongoing outbreaks, periodic reporting to higher levels is necessary and daily reporting is mandatory. Notification of outbreaks can be verbal, initially, followed by a written report which shall include the following:

- Details of time, place and person/animal data
- Recommendations for further action or response by the District and higher levels.
- Description of assistance needed from higher levels to effectively manage the outbreak.

Health workers are also required to report case-based information for diseases targeted for elimination or eradication using a case/outbreak investigation form.

Schematic Flow of reporting in animal health is indicated in Figure 1.

Figure 1: Schematic flow of information and data in animal health



3.3. Surveillance and control of zoonoses at Ports of Entry (PoE)

In general, a port of entry (PoE) is a place where people, animal and animal products may lawfully enter a country. International airports, sea and dry ports are examples of PoE**.** Routinely, PoE have staff who check passports, visas, import/export and health certificates and inspect luggage.

The PoE can facilitate transmission of infectious substances/organisms in/from a country which could be through travellers, pets and other animals, animal products, grains or other food items. Transmission can also be through rodents and insects found in conveyances, large containers, ships, vehicles, aircrafts carrying goods, and or passengers transiting from one country to another. Of these, some could be parasites, viruses or vectors with the potential to spread zoonotic diseases.

This section is intended to guide port operators, regulators, policy and decision makers, professionals and other competent authorities at all levels on effective surveillance systems for Zoonotic diseases at POEs in Tanzania, in line with national human and animal surveillance guidelines and within the framework of **International Health Regulations - IHR (2005) and OIE Animal Health Terrestrial Code (2017).** Efforts will be made to have active Trans-boundary collaboration and cooperation in ensuring effective prevention and control of zoonoses across countries.

Surveillance and control at port of entry is aimed to;

- Enable early detection of disease situations for their timely verification and control
- Provide data to competent authorities for risk assessment of events
- Inform competent authorities at PoE, other relevant levels in the health system and other sectors (e.g. customs, animal health, conveyance operators) to assist them in adopting preventive measures, investigation, management and follow up of events
- Alert other PoE likely to face similar events, either directly or through the NFP or other structures according to national and regional practices;
- Monitor changes in trends of events at PoE
- Prevent and/or manage the importation and exportation of health hazards (including diseases and their agents) in a country
- Prevent the international dissemination of vectors, reservoirs and spread of vector-borne diseases.

1) Responsibilities of authorities at PoE:

i. Monitor baggage, cargo, containers, conveyances, goods, postal parcels and human remains departing to and arriving from affected areas to ensure they are maintained in such a condition that they do not serve as sources of infection or contamination. This applies equally to vectors and reservoirs potential of spreading zoonotic diseases;

ii. Ensure facilities used by travellers at points of entry are maintained in a hygienic, free of sources of infection or contamination, including disease vectors and reservoirs

iii. Supervise disinfection/decontamination of baggage, cargo, containers, conveyances, goods, and human remains as appropriate. Advise conveyance operators, as early as possible to institute appropriate control measures to a conveyance, including effective supervision of the removal and safe disposal of any waste and contaminated water or food

iv. Supervise providers of services to travellers

a. Inspect for appropriate vaccination of humans and animals e.g. pets such as dogs, and ensure systems are in place to have vaccines administered when required

b. Carry out medical examinations as necessary and in response to any outbreak.

c. Ensure that human and animal desks at PoE have travellers itineraries, showing place of departure, place of stay in country availed by relevant port authorities that will be reached immediately in case of suspected public health threat.

v. Ensure firm preparedness to deal with an unexpected public health events related to the targeted zoonotic diseases, including

a. A centre/room for isolation, inspection, sample collection and safe sample transport system.

b. Non-invasive medical examination tools, capable of performing least intrusive examination to yield the intended public health objective

c. A service/observation room

d. A vaccination/prophylaxis centre

vi. Provide updates regularly to the National IHR Focal Point and DVS on relevant public health measures taken at PoE.

vii. Ensure close collaboration and communication between animal and human desks at all PoE.

2) Responsibility of travellers

Travellers are expected to comply with international health travel regulations on all vaccinations required. They are also expected to declare their state of health to relevant authorities in case of change of status, or if known prior to travelling. In case of an imminent public health risk, the responsible health staff should request or advise a traveller to undertake certain measures including vaccination or prophylaxes for a relevant health risk (Table 11, Table 12) in accordance with Tanzania national Laws to control that health risk.

Travellers are expected to comply with international guidelines when required to be isolated, quarantined or placed under health observation. The same applies to companion animals and animal products accompanied by the travellers.

Table 11: Recommended vaccination/treatment options for prioritized zoonoses at PoE

Zoonotic Diseases	Regulatory requirement
Rabies	• Vaccination is mandatory for all dogs/cats • Post Exposure prophylaxis to humans bitten by rabid animal • Pre-exposure prophylaxis for those at high risk of contracting rabies virus
Avian Influenza	• Thermal screening, isolate • Health certificate indicating test results (in animals)
Brucellosis	Health certificate indicating test results and vaccination status (in animals)
RVF and other VHDs	• Isolation, Yellow Fever vaccine (mandatory) • Health certificate indicating test results and vaccination status (in animals)
Human African Trypanosomiasis	• Passive and active surveillance is recommended and treatment provided once disease is confirmed

Table 12: Relative risk at PoE of priority zoonotic diseases, their vectors and causal agents

Disease	Vector	Causal organism	Reservoir/primary host	Risk at PoE
Rabies	None	Rabies virus	Dog/cat	High
Anthrax	None	*Bacillus anthracis*	Wild and domestic ruminants	High
Avian Influenza	None	Virus H5NI, H7N1	birds	High
Brucellosis	None	*Brucella* spp	Domestic and wild animals	Low
RVF and other VHDs	Mosquitoes	RVF virus	Cattle, sheep, goats	High
Human African Trypanosomiasis	Tsetse flies	*Trypanosoma* spp	Wild and domestic animals	Low

3.4. Community based surveillance and reporting

a) Community role

The Community has a role to report any disease outbreaks and related diseases, events, or rumours within its borders. This is achieved through the use of Community Standard Case Definition. Community Based Disease Surveillance is an important strategy for early detection of diseases, which facilitates early response and management of outbreaks. It provides the link between health facilities and the Community. Data from the Community helps the health facility workers have a better and early management of the health of the community.

Community Based Disease Surveillance integrates referred patients into routine care and case management activities within a facility level. The Community Based Disease Surveillance is reported through various reporting forms.

b) Rumours investigation

The health facility and district must prepare a method of tracking suspected outbreaks, events and rumours from the community and submit to the higher level on a monthly basis. However, if the public health event requires immediate action then immediate notification and report is mandatory (Annex 5, Logbook of suspected outbreaks and rumours and community surveillance form).

Community health workers/extension officers are responsible to report rumour to the nearest health facility /veterinary office or local authority, however, any individual within the community should report.

Example:

i. A village chairperson may report sudden unexplained deaths of animals in a certain locality.
ii. A school teacher may report unusual occurrence or increase of children with fever and severe flu in a group of pupils coming from a certain locality.

3.5. Analysis and interpretation of surveillance data

Analysis of Data

Analysis of surveillance data involves separating information by specific characteristics, to see whether the characteristics are related to disease occurrence. A change within a characteristic is important with regard to disease occurrence. Analysis of surveillance data generally involves three characteristics, “time,” “place,” and “person/animal.”

- *Time* refers to when the cases occurred
- *Place refers to where the cases occurred*
- *Person/animal refers to who was affected (age group, sex, occupation, species, etc.)*

i) Analysis of data by time

The purpose of time analysis is to detect changes in disease occurrence over time. For example, irregular or unusual change over a specified time period may mean a potential outbreak, or periodic repeat in disease patterns over time helps to predict future disease occurrence and can be used to estimate resources needed. Data presentation by analysis of time can be in tables, figures, graphs or charts.

ii) Analysis of data by place

Analysis of place provides information that will be used to: a) spot locations of disease cases and identify human/animal population at highest risk of infection or transmission of specific disease, b) describe environmental factors, c) understand human/animal population distribution and density in the area and d) identify health facilities, abattoir, and livestock market, dip tanks etc.

iii) Analysis by person/animal

This can help to identify the population most at risk for different diseases. Depending on disease cases are characterized according to age, sex, race, occupation, animal species, mobility records and other known risk factors for the disease. This information comes from registers, forms and line lists. However, it is easier to identify problems and detect outbreaks if the data from the patient record or clinic register are summarized and displayed in a table, graph or map it is easier to see patterns and trends.

iv) Measures of disease occurrence

Measures of disease occurrence are basic tools used to describe quantitatively the causes and patterns of disease, or any other event related to health in human populations (**Table 13**).

Table 13: Measures of disease occurrence

Measure	What it is	What it is used for	Examples
Frequencies	Tells the number of cases or deaths that occurred	To know the extent of disease or death in one group of people	• Number of children under five with rabies reported • Number of deaths reported due to rabies
Percentages (Proportions)	Tells the number of specific events being measured (such as cases) compared to the number of all events being measured (such as size of population in which given disease occurred). Number of people in a group with disease or characteristic _____ X 100 Total number of people in the group	To compare information from populations of different sizes or characteristics (age, gender, etc.) within a same time period	• Percentage of children with rabies: 100X * number of children with rabies Total number of children
			• Percentage of brucellosis cases that are in children aged 5 to14 years: =100 X * number of reported brucellosis cases among 5 to-14 yrs Total number of reported brucellosis cases

Rates	Tells the number of specific events being measured compared to the number of all events within a specific unit of time. No. of people in a group with disease_____ _____ total number in group _____ unit of time when disease occurred	To compare information from different events occurring at different time periods (e.g. compare 2002 to 2003).	• Yearly Case Fatality Rate: Percentage of cases that died in one year (2003). • Monthly incidence rate: number of new cases occurring in one month (e.g. January) / total population

For example:

- How many people/animal are affected by a certain disease?
- What is the rate at which the disease is occurring through time?
- How does the disease burden vary by geographical region, sex, age, or various modes of exposure?

a. Frequency

Frequency tells the number of cases or deaths that occurred. An example of a frequency or count include the number of cases in each day of a certain disease (Table 14). The data is extracted from MTUHA or linelist or surveillance forms as appropriate.

Table 14: Daily and weekly summary of brucellosis cases in Cheza Dispensary

Day	Number of Cases
1	9
2	12
3	11
4	13
5	14
6	13
7	16
Total Cases	**88**

b. Percentages (Proportions)

Proportion tells the number of specific events being measured (such as cases) compared to the number of all events being measured (such as size of population in which given disease occurred). Proportions can be expressed as percentages.

If 55 patients are attending Cheza Dispensary on a single day, with 22 being males and 33 being females;

Proportion of males = 22/55 = 0.40 or 40%

Percentage of males=0.40X100=40%

c. Rates

A rate is a measure of disease occurrence for a given population over a specified time period. Rates consist of two parts: a **numerator** and **denominator**.

Numerator:

The numerator determines the type of rate. As seen above, if the numerator is the number of **new** cases for a period of time, then the rate is an incidence rate. **Prevalence rates** use the numerator of **existing cases** (old cases plus new cases) at any one point in time. A prevalence rate is like a photograph that captures all cases that exist, old and new. Incidence rates identify only new cases, which allow you to determine whether the disease is **currently increasing or decreasing**. **Incidence rates** are the preferred measure of disease frequency.

Denominator:

It is important to define the denominator and collect data for ensuring accurate denominator information. Population at risk is used as a denominator and may be defined as the total human/animal population in a village. For a given health facility, the denominator may be defined as the total population served by the health facility or village. Once one determines the denominator and numerator, then one can calculate the appropriate rates.

The total number of cases reported, is not a comparable measure of disease occurrence. For example, from Table 15, health facility B reported 44 cases of anthrax and health facility C reported 30 cases. By incorrectly comparing the number of cases reported, it seems that areas served in health facility B have a higher occurrence of anthrax than areas in health facility C.

Table 15: Cases of anthrax reported by health facilities, October 2000 – In District X

Health Facility (HF)	Number of Cases	Number of Deaths
A	34	5
B	44	8
C	30	3
D	21	4
Total	129	20

Health facility B: 44 new reported cases for June

Health facility C: 30 new reported cases for June

In this example the total population at risk is the population in the areas served by the health facilities, or catchment areas. The population in the area served by health facility B is 6,240. For areas in health facility C, the population at risk is 2,470. We find that the rate at health facility C is actually higher than the rate for health facility B. This type of rate is called an incidence rate because the numerator contains the total number of new cases for the month of October. For prevalence rates, use the number of **existing** cases for the numerator at any one point in time divided by the total population at risk.

By calculating rates, we take into consideration the differences in size of the at-risk population for each area. In order to calculate a rate, you must know the appropriate denominator.
Other rates which are of importance to know include:

Health facility B: Incidence Rate = 44 new cases / 6,240 persons X 1,000 = 7 cases / 1,000 persons

Health facility C: Incidence Rate = 30 new cases / 2,470 persons X 1,000 = 12 cases/ 1,000 persons

i. Case fatality rate:

This is defined as the proportion of people with the specified disease who died from that disease. Case fatality rate is most often expressed as a percentage. The denominator is only those who have the disease and the numerator is the number of people who died from that disease. From Table X above it is easy to calculate a **case fatality rate**.

Case fatality rate (CFR) = (No. Deaths/Total No. Cases) X 100 = %

CFR = 20 deaths / 129 cases) X 100 = 15.5 %

A very high case fatality rate may indicate a virulent pathogen, poor quality of medical care or no medical care. The case fatality rate of the disease can be compared between different villages, cities, and districts. This type of comparison may identify different strains of the organism or differences in medical treatment. It is important to examine the magnitude and the trend of the case fatality rate for each disease.

Several factors affect the CFR such as case management, promptness of case identification, age, magnitude of the inoculum, drug resistance, new organism strain, and others. Public health programs can often influence the case fatality rate by ensuring that cases are promptly detected and high quality case management is applied.

Mortality rate: Mortality rate, or death rate, is a measure of the number of deaths (in general, or due to a specific cause) in a particular population, scaled to the size of that population, per unit of time (Table 15)

Morbidity rate: Calculating incidence of mobility in a group of animals is to count the animals which develop illness over a period of time and divide this number by total number of animals in the group at the start of time period (Table 16).

Table 16: Cases of anthrax reported by DVO, Kashasha district in January 2017

Ward	Number of animals	Number of cases	Number of deaths
A	3200	34	5
B	2200	44	8
C	4000	30	3
D	5200	21	4
Total	**14,600**	**129**	**20**

Mortality rate = Number of death/ total population
= 20/14,600*100= 0.13%

Morbidity rate = No of diseased animal/ total population
= 129/14600*100=0.9%

Interpretation of data

The purpose of surveillance is to provide data that can be used to for decision making. The analysed data should be interpreted to determine the following:

- Immediate public health/animal health threats /outbreaks
- Noticeable increase or decrease in the disease rates
- Gradual increase or decrease in the trends of disease
- Non-decrease in disease incidence or case fatality rate in areas of disease occurrence
- Characteristics that may be associated with disease (time, place and person/animal /vectors)
- Further investigation

The interpretation of data will allow responsible authorities determine if action thresholds have been reached. Thresholds are markers that indicate when something should happen or change. They help to answer the question “when will you take action and what will that action be”. Normally, thresholds for specific disease conditions or events are predetermined. Each disease or condition has a point where the problem must be reported and an action taken. In case of epidemic prone diseases, a threshold is reached when there is a single case.

Non-outbreak related surveillance data and response

This compares the current situation with previous month to month events (short term analysis) and, season and year events (long term analysis). Trends on line graphs indicate whether the number of cases and deaths for a given disease is stable, decreasing or increasing. Determination of CFR will show if the rate is the same, higher or lower than in previous months.

4 INFORMATION SHARING AND RESPONSE

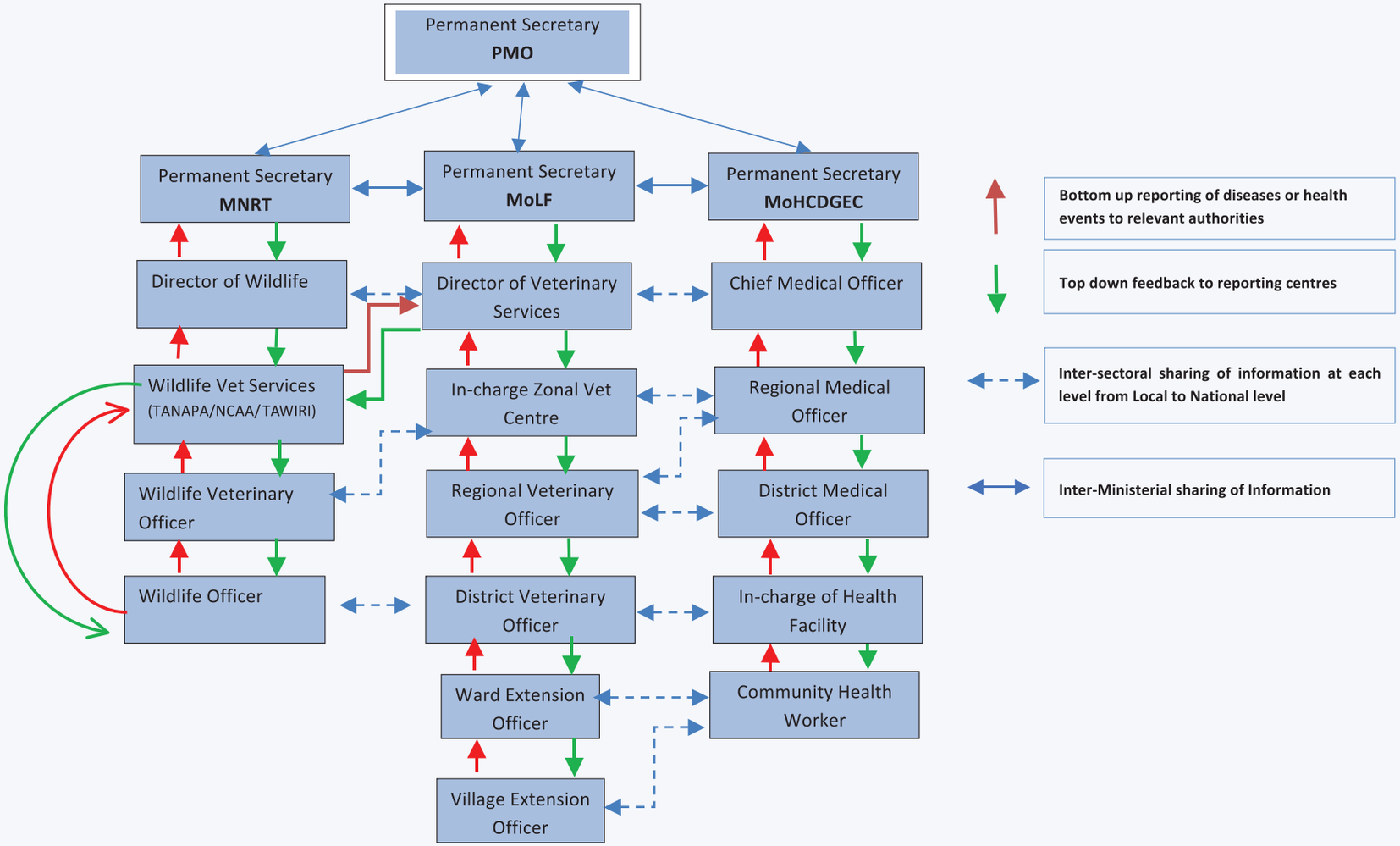
Sharing of surveillance data is key to effective and timely communication and dissemination of information to stakeholders at all levels. This includes the sharing of information through digital systems. The ICT sections of Ministries responsible for public and animal health in collaboration with OHCD and partners, including the private sector, can greatly facilitate this action. Sharing of surveillance data/information enhances early warning and triggers multisectoral response in One Health approach.

The consumers for surveillance data/information are administrators, planners, policy/ decision makers, public and animal health professionals, community and other relevant stakeholders (Table 17, Figure 2).

Table 17: Type of information to be shared and responsible levels

Type of information to be shared	Responsible	Level
Rumours on cases and events of public health importance	Any person in the community	All levels
Suspected cases/events/of animal/ human zoonoses	Extension officers/Healthcare workers/ wildlife officers	Village/ward levels/all levels
Suspected/ confirmed cases/ events of animal/human zoonoses	District Surveillance Officer/District Veterinary Officer/ wildlife veterinarian	District level, all levels
Monthly analysed case reports	Regional Surveillance Officer/ Zonal Veterinary Centre / wildlife veterinarian/ Laboratories	Regional/ zonal level
• Monthly analysed confirmed case reports • Suspected/immediate cases/ events	National Surveillance Officer/ Laboratories /National Epidemiology Unit for Response and Management	National level
Quarterly aggregated case reports	Line Ministries	One Health Coordination Desk
Weekly/Monthly/Biannual analysed confirmed cases reports	Relevant international agencies (WHO, FAO, SADC, OIE…)	International level
Response activities on outbreaks/ events of public health importance	Line ministries, PO-RALG, relevant professionals and other stakeholders	All levels

Figure 2: Information sharing among stakeholders



Feedback

Effective feedback shall be specific to ensure that the recipient understands the subject of the feedback, based on the report submitted or the actual events and activities observed in the field. Feedback shall be provided as soon as feasible so that the recipient(s) remembers the activities to be sustained or corrected. Feedback to the surveillance site where the data originates has the following advantages:

- Motivates those who sent the data and hence increases compliance for reporting.
- Increases quality of data from those who collect the data.
- Enhances the planned public health action
- Compliment planning for appropriate actions.
- Stengthens communication and team work spirit.

Feedback can be classified as supportive or corrective. Feedback is supportive when it reinforces and acknowledges good performance, and corrective when a change in behaviour and improvement is required. Feedback can be verbal or written or both.

Feedback can be in the form of verbal communication at gatherings (meetings, seminars, and workshops) or electronic (e-communication) by phone, radio and TV. It can also be in print eg. newsletters, daily newspapers, fliers, emails or faxes (Table 18).

Table 18: Information sharing and dissemination channels

Type of information to share	Target audiences	Sharing strategies	Dissemination channels
Annual zoonotic disease reports	International organization Development partners	Immediate notification, monthly/ annual report, Ad-hoc i.e. meeting, conferences	Hard printed or electronic versions
Consolidated report/ back to office report	Policy/decision makers; Partners	Meetings	Printed report Face to face
Consolidated animal/ human surveillance data	Technical staff at HQ & Zone/ Regions	-Training -Workshops -Scheduled meetings	1. Interpersonal communication 2. Workshops
Summarized surveillance data/report	Districts	Daily/weekly bulletin, workshop training Scheduled meeting	Interpersonal communication, printed reports or through electronic systems
Flush report/lab results	ZVC to DVOs/ DMO's	Lab result reports	Interpersonal communication Printed report or through electronic systems
Disease information and trends	DVO/ DMO to livestock field officers/ health workers	Summarized report, workshop training	Interpersonal communication Printed report postal delivery/ electronic systems including social media
	POE/Border Post	Early warning report, workshop training	Interpersonal communication. Print materials
	Local/District/Regional policy makers	Summarized report, Scheduled meetings	Face to face Printed report
Simplified disease report summary	Community	Local baraza, village meeting	Brochures, Fliers/Local radio

5 SUPPORTIVE FUNCTIONS IN SURVEILLANCE

Supportive functions enhance performance on core surveillance functions and include, among others: Capacity building on prevention, detection and response. Surveillance functions are also supported by a number of Laws and Regulations governing prevention, detection and response to zoonoses in Tanzania. These include: Public Health Act of 2009, Presidential Circular No. 1 of 2002, Animal Disease Act No. 17 of 2003, the Food, Drugs and Cosmetics Act No 1 of 2003, Animal Welfare Act No. 19 of 2008, Livestock Identification and Traceability Act no 12 of 2010, The Local Government (District Authorities) No 7 of 1982, The Local Government (Urban Authorities) Act of 1982 and Livestock Policy of 2006. These Laws and Regulations should be studied and enforced. It should be noted that these Laws and Regulations are in compliance with WHO International Health Regulations (2005) and World Organization for Animal Health (OIE) standards.

5.1. Capacity building (personnel)

Capacity building shall address the shortage of well-trained health professionals and other resources required to prevent, detect and respond to zoonotic and other infectious diseases.
Capacity building shall include:

(i) Livestock field officer at the ward and Staff at the health facilitate to be oriented/trained on the use of surveillance guideline

(ii) Undergo in service training of DVOs and ZVC, in charge, who are responsible for validation of surveillance reports,

(iii) Undergo in service training of DMOs and Surveillance Officers at the District and RMOs at the region who are responsible for validation of IDSR reports

(iv) DVOs, ZVCs, in charge, DMOs, RMO Epidemiology staff at the Ministries responsible for health and livestock to be trained on data analysis and GIS

(v) Laboratory staff from human and veterinary sectors to be trained on new techniques on confirmation of the priority zoonotic diseases.

5.2. Laboratory strengthening and networking

An active laboratory network, between human and animal health is key for supporting joint surveillance of zoonotic diseases. However, networking must be based on an enabling environment, including physical infrastructure, adequate supplies and guaranteed utilities. This strength can achieved by considering the following:

(i) Strengthening human and animal laboratory capacity in confirmation of zoonotic diseases

(ii) Integrating or increasing collaboration among human and animal laboratory systems in One Health approach.

(iii) Strengthening the capacity of the animal/human health system to conduct effective joint surveillance activities and provide better information for planning and managing services of all types.

(iv) Evaluating the capacity needed at national (reference), regional/zonal, and district human/animal health laboratories and implement the necessary strategies based on experience with Integrated Disease Surveillance and Response (IDSR) and other ongoing platforms to build capacity at each level.

(v) Improving inter laboratory communications and networking within the country and the region.

(vi) Field-testing novel point-of-collection diagnostics appropriate for screening outbreak specimens.

(vii) Training biomedical engineers, in-country, to certify biosafety cabinets and repair/maintain general laboratory equipment (centrifuges, fridges, freezers, incubators).

(viii) Mapping all laboratories in the country with geographic information system (GIS) technology, based on population density, disease burden, laboratory capacity including: laboratory commodity supply chain, networks, partner domains and competencies.

(ix) Developing national protocols to address specimen handling (safe and secure collection, packaging, transportation, and disposal), controlled archiving, and import/export procedures for humans and animals.

(x) Supporting validation of appropriate tests including, development of new tests,

(xi) Guiding re-programming of interventions and development of evidence based policies

5.3. Information, communication technology and infrastructure

The IDSR, IHR (2005) and PVS frameworks mutually emphasize the development of core capacities to detect, confirm, report, and respond effectively to priority diseases and conditions at every level of national health systems. Timeliness and completeness of reporting for weekly and monthly reports is important to ensure quick response as well as absence of disease in areas under surveillance. Lack of dependable communication technology and infrastructure is a big constraint for timely reporting of diseases, including zoonoses, at all levels.

The use of digital systems eg. mobile phones by the health sector, has proved to be effective and efficient hence is being rolled out in regions and districts. Mobile health laboratory technology should be used for humans and animals to facilitate timely reporting. The ICT sections of ministries responsible for public and animal health in collaboration with OHCU and partners, including the private sector, can greatly facilitate the establishment of database linking between epidemiology units and laboratories to foster data and information sharing (interoperable) between sectors and stakeholders.

Information from Social Media

Information from social media on animal cases received by any personnel in the surveillance system should be directed to the DVO in collaboration with ZVC in question who will in-turn be responsible to make investigation and act accordingly. Information from the human sector shall be directed to the DMO, and for wildlife cases information shall be sent to the Zonal Veterinary Officer who will investigate and act appropriately.

6 MONITORING AND EVALUATION

6.1. Monitoring and evaluation of the system

Monitoring of surveillance and response systems refers to the routine and continuous tracking of planned surveillance activities. Periodic (eg. biannual or annual) evaluation assesses whether surveillance and response objectives have been achieved. Monitoring and evaluation is used to improve surveillance and response.

Monitoring of surveillance system starts at the community level and it is done through the focal person (human and animal health personnel). The staff responsible for surveillance at the community, health facility, district, regional and national levels review and analyse the data reported during the specified period of time (daily, weekly, monthly or quarterly) and make conclusions about the timeliness and completeness of reporting from each level and the quality of routine prevention and control activities taking place for the human and animal health sectors.

6.2. Targets and indicators

Indicators are used to measure the extent of achievement of an objective for a particular program or activity. The achievement is compared to overall recommended standard quality practices (set goals) (Table 19).

Table 19: Core indicators for monitoring and evaluation

Task to measure		Zoonotic disease surveillance indicator	Numerator	Denominator	Source of information	National targets
1. 1. 2. 3.	Timeliness of village extension officers/health facility reporting to the district. i. ii.	Proportion of weekly reports received by district on time	Total number of weekly reports received on time by the district	Total number of weekly reports expected by the district	a. Monitoring chart for timely submission of report b. Monthly (or weekly) summary reporting forms c. District record of timeliness of monthly or weekly reporting.	80%
		Proportion of monthly reports received by district on time	Total number of monthly reports received on time by the district	Total number of monthly reports expected by the district		
		Proportion of quarterly reports received by district on time	Total number of quarterly reports received on time by the district	Total number of quarterly reports expected by the district		
4. a. 2.	Reporting of priority zoonotic diseases using case investigation forms/linelist	Proportion of cases of priority zoonotic diseases which were reported to the district using case investigation forms/ linelist	Total cases of priority zoonotic diseases which were reported to the district using case investigation forms/ linelist	Total cases of suspect priority zoonotic diseases reported to the district and expected to have a CIF/ linelist	a. Case-based or line- listing/outbreak forms submitted to the district from the village extension officers /health facility. b. Monthly summary reporting forms	80%
3. b. c. 5.	Completeness: Village extension officers /health facility reporting to the district iii. iv.	Proportion of expected complete weekly reports that are received by district.	Total number of complete weekly reports that are received by district	Total number of expected complete weekly reports	a. Monthly (or weekly) summary reporting forms b. District record of completeness of monthly or weekly reporting.	90%
		Proportion of expected complete monthly reports that are received by district	Total number of complete monthly reports that are received by district	Total number of expected complete monthly reports.		
		Proportion of expected complete quarterly health facility reports that are received by district	Total number of complete quarterly health facility reports that are received by district	Total number of expected complete quarterly health facility reports		

6. 4.	Effective laboratory confirmation process	Proportion of suspected outbreaks of diseases in which specimen collection and laboratory confirmation are completed according to guidelines	Total number of suspected outbreaks of diseases in which specimen collection and laboratory confirmation procedures are followed.	Total number of suspected outbreaks of diseases investigated	a. District log of suspected zoonoses and community/ rumours b. Reports from the laboratory c. Reports of supervisory visits	80%
7. d. 5.	Appropriateness of investigation of suspected outbreaks	Proportion of suspected outbreaks of epidemic-prone disease that are investigated according to animal and human health guidelines.	Total number of suspected outbreaks of epidemic-prone disease that are investigated according to guidelines.	Total number of suspected outbreaks of epidemic-prone disease	a. District log of outbreaks and community/ rumours b. Outbreak investigation data or reports	80%
8. 6.	Appropriateness of response to confirmed outbreaks	Proportion of confirmed outbreaks of epidemic-prone disease with appropriate response according to guidelines	Total number of confirmed outbreaks of epidemic-prone disease with recommended response according to guidelines.	Total number of confirmed outbreaks	a. Log of suspected / confirmed outbreaks (linelist) and community (logbook of rumours). b. outbreak report c. Report of supervisory visits* d. ZDS technical guidelines	80%
9. 7.	Routine data analysis	Proportion of facilities / village extension officers who: i) use summary data sheet, ii) use MTUHA Book 2, and 3, iii) have updated graphs of disease trends for zoonotic diseases.	Total number of health facilities / village extension officers who: i) use summary data sheet, ii)) use MTUHA Book 2, and 3, iii) have updated graphs of disease trends for zoonotic diseases.	Total number of village extension officers / health facilities	a. District analysis book/ reports b. ZDS monthly reporting form c. Charts/graphs	80%
10. 8.	Laboratory is an integral part/ component in surveillance	Proportion of cases/CIF from priority zoonotic diseases with laboratory results attached	Number of CIF with lab results	Total number of CIF	a. CIF b. Log books	80%

11. 9.	Laboratory is an integral part/ component in outbreak	Number of outbreaks investigated	Number of outbreaks investigated with laboratory results	Total number of outbreaks	Laboratory test reports	80%
12. 10.	Timeliness of confirming the outbreak	Proportion of outbreaks that are timely confirmed within seven days (depending on disease from index case detection to laboratory confirmation)	Number of outbreaks confirmed from index case(s) detection to laboratory confirmation	Total number of outbreaks (index cases) occurring per period under review	Epidemiology Unit data	80%
e.		Proportion of outbreaks that samples from index cases are timely submitted to the laboratory (within five days) from reporting the index/suspected outbreak case	Total number of outbreaks of which samples from index cases are timely submitted (within five working days) from reporting of index case / suspected outbreak	Total number of outbreaks (index cases) occurring per period under reviewed	Epidemiology Unit data	80%
f.		Proportion of outbreaks (index cases) that laboratory results are released (within three working days) from date of submission of samples.	Total number of outbreaks (index cases) that laboratory results are released (within three working days) from date of submission of samples.	Total number of outbreaks (index cases) occurring per period under reviewed	Epidemiology Unit data	80%
13. 11.	Surveillance information shared between sectors**.	Proportion of surveillance reports and documented information shared quarterly, biannually and annually	Number of surveillance reports and documented information shared	Total number surveillance reports and documented information that were supposed to be shared	Epidemiology Unit data	80%

*Supervisory visits information should not be duplicated

**All sectors involved, which includes epidemiology units dealing with animal and public health, and the Prime Minister's office

When problems are detected in optimally operationalizing the surveillance and response system, corrective action shall be taken to strengthen the system. The monthly monitoring data can be used to do an evaluation at the end of the year.

Evaluation questions should include:

- Are surveillance objectives for existing activities met?
- Was surveillance data used for taking appropriate action?
- Did surveillance, laboratory and response activities have an impact on the outcome of health events at the appropriate levels (community/health facility, district, and region)?
- Did the surveillance tool adequately capture the data needs?

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Annex 1: Registration for out-patients (OPD)

S/N	ID	Name of patient	Address	Age	Sex	Occupation	Date of onset	Diagnosis	Lab status	Immunization status	Treatment	Outcome	Other comments
1	2	3	4	5	6	7	8	9	10	11	12	13	14

Annex 2: OPD register for Notifiable diseases

1	2	3		4	5	6	7			8	9	10	11	12	13	14	15	16
S/N.	Date	ID No.		Name of patient	Date of onset	Address (village/ street)	Age			Weight (Kg)	Height (cm)	Investigations requested	Results	Immunization status	Diagnosis	Treatment	Outcome (e.g. referral, admission or death)	Comments
		Year	No				Days	Months	Years									

Annex 3: Registration of In Patients (IPD)

S/N	ID	Name of patient	Address	Age	Sex	Occupation	Date of onset	Date of admission	Diagnosis on admission	Lab status	Immunization status	Treatment	Outcome	Diagnosis on discharge	Date of discharge	Other comments
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17

Annex 4: Weekly reported new cases/deaths during an epidemic at health facility and district levels

District _____ Health facility _____

Week beginning _____ Week ending _____ Month _____

S/N	DISEASES	<5 CASES				>5 CASES				TOTAL				Cumulative Totals (From 1st January			
		C		D		C		D		C		D		C		D	
		M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
1	Anthrax																
2	Brucellosis																
3	Zoonotic avian influenza																
4	Rabies/Animal bites																
5	Trypanosomiasis																
6	Viral Haemorrhagic Fevers																
Total No. of HFTs																	
No. of HFTs Reported																	
No. of HFTs Reported Timely																	

Reported BY: _____ Designation: _____ Sign: _____ Date: _____

Reporting instructions:
Health facility level: Send a copy to DMO/DHO and retain a copy by Wednesday 03.30 PM
District level: Summarize, then send copied to the RMO/RHO and retain a copy by Thursday 9.30 PM

Adapted from IDRS, 2005

Annex 5: Logbook of Suspected Outbreaks and Rumours

Record verbal or written information from health facilities or communities about suspected outbreaks, rumours, or reports of unexplained events. Record the steps taken and any response activities carried out.

Condition or Disease or Event (1)	Number of cases initially reported (2)	Location (Health Centre, village, etc.) (3)	Date district was notified (4)	Date suspected outbreak was investigated by the district (5)	Result of district investigation (Confirmed, Ruled out or Unknown) (6)	Date Outbreak Begun (Date onset index case/ date crossed threshold or first cluster) (7)	Date a case was first seen at a health facility (8)	Date specific intervention began (9)	Type of concrete intervention that was begun (10)	Date District Notified National Level of the Outbreak (11)	Date District received national response (12)	Comments (13)

Annex 6: Rift Valley Fever Human Case Form for Individual (VHFs)

This questionnaire should be completed with as many people as possible in households that are identified as having RVF suspect. Samples should also be collected from individuals following standard Zoonoses and Emerging Livestock Systems (ZELS) protocols.

1. Local outbreak tracking number: [ ]

2. Sex: ☐ Male ☐ Female

3. Age in years [_][_][_]

4. Date of birth (dd/mm/yyyy): [_][_]/[_][_]/[_][_][_][_]
   If only the year is known, code 01/07/yyyy.
   If only the month and year are known, code 01/mm/yyyy.

5. What is your marital status?
   ☐ Married ☐ Single
   ☐ Divorced/Separated ☐ Widower

6. What is your tribe?
   ☐ Arusha ☐ Chagga
   ☐ Pare ☐ Maasai
   ☐ Sambaa ☐ Iraqw
   ☐ Other (specify ……..)

7. How many years of education have you had?
   ☐ No education
   ☐ Primary (1-7 years)
   ☐ Secondary (8-11 years)
   ☐ High school (12-13 years)
   ☐ University / college

8. Have you had any new illness in the past 12 weeks
   ☐ Yes ☐ No

9. If yes, what were the signs and symptoms?

☐ Fever	☐ Chills	☐ Headache
☐ Photophobia	☐ Weakness	☐ Muscle pain
☐ Joint pain	☐ Nose bleeds	☐ Red eyes
☐ Rash	☐ Vomiting/nausea	☐ Abdominal pain
☐ No appetite	☐ Confusion	☐ Dizziness
☐ Neck stiffness	☐ Change in vision	☐ Severe neurologic disease (e.g. coma)
☐ Bruising	☐ Blood in stool	☐ Severe ocular disease (e.g. blindness)
☐ Vomiting blood		

Please list any other clinical signs/symptoms described, or more detail on the severe disease:

10. When did these signs of new illness start?
    [ ][ ]/[ ][ ]/[ ][ ][ ][ ]

11. Have you consumed any of the following kinds of dairy products?

Dairy Product	**Since start of outbreak***	**Past 6 months**
Raw milk	☐ Yes ☐ No	☐ Yes ☐ No
Cheese made from raw milk	☐ Yes ☐ No	☐ Yes ☐ No
Butter made from raw milk	☐ Yes ☐ No	☐ Yes ☐ No
Cream made from raw milk	☐ Yes ☐ No	☐ Yes ☐ No
Yoghurt made from raw milk	☐ Yes ☐ No	☐ Yes ☐ No
Other products made from raw milk (specify - freeform)	☐ Yes ☐ No	☐ Yes ☐ No

* Start of signs in animals

12. Have you consumed milk products from your own animals since the start of the outbreak?
    ☐ Yes ☐ No

13. If you have consumed raw milk or products made from raw milk in the past 6 months, where did they come from? (*choose all that apply*)
    Shop ☐ Yes ☐ No
    Open market ☐ Yes ☐ No
    Neighbour/friend/family ☐ Yes ☐ No
    From own cows ☐ Yes ☐ No
    From own goats ☐ Yes ☐ No
    From own sheep ☐ Yes ☐ No

14. Have you consumed the following kinds of raw meat, offal or raw animal blood?

Meat/Animal Product	**Since start of outbreak**	**Past 6 months**
Raw cow blood	☐ Yes ☐ No	☐ Yes ☐ No
Raw goat blood	☐ Yes ☐ No	☐ Yes ☐ No
Raw sheep blood	☐ Yes ☐ No	☐ Yes ☐ No
Raw goat blood	☐ Yes ☐ No	☐ Yes ☐ No
Raw blood from another animal (specify - freeform)	☐ Yes ☐ No	☐ Yes ☐ No
Raw meat or offal from a cow	☐ Yes ☐ No	☐ Yes ☐ No
Raw meat or offal from a goat	☐ Yes ☐ No	☐ Yes ☐ No
Raw meat or offal from a sheep	☐ Yes ☐ No	☐ Yes ☐ No
Raw meat or offal from another animal (specify - freeform)	☐ Yes ☐ No	☐ Yes ☐ No

15. Have you consumed meat or blood products from your own animals since the start of the outbreak?
    ☐ Yes ☐ No

16. For raw meat or blood products consumed in the past 6 months, where did they come from? (*choose all that apply*)

Shop	☐ Yes	☐ No
Open market	☐ Yes	☐ No
Neighbour/friend/family	☐ Yes	☐ No
From own cows	☐ Yes	☐ No
From own goats	☐ Yes	☐ No
From own sheep	☐ Yes	☐ N

17. Have you milked any of the following animals?

Animal	**Since the start of the outbreak**	**Past 6 months**
Cattle	☐ Yes ☐ No	☐ Yes ☐ No
Sheep	☐ Yes ☐ No	☐ Yes ☐ No
Goats	☐ Yes ☐ No	☐ Yes ☐ No
Camels	☐ Yes ☐ No	☐ Yes ☐ No

18. Have you assisted with the birth of any of these animals?

Animal	**Since the start of the outbreak**	**Past 6 months**
Cattle	☐ Yes ☐ No	☐ Yes ☐ No
Sheep	☐ Yes ☐ No	☐ Yes ☐ No
Goats	☐ Yes ☐ No	☐ Yes ☐ No
Camels	☐ Yes ☐ No	☐ Yes ☐ No

19. Have you handled/had contact with any placental or birth material of these animals, including young-stock that have just been born?

Animal	**Since the start of the outbreak**	**Past 6 months**
Cattle	☐ Yes ☐ No	☐ Yes ☐ No
Sheep	☐ Yes ☐ No	☐ Yes ☐ No
Goats	☐ Yes ☐ No	☐ Yes ☐ No
Camels	☐ Yes ☐ No	☐ Yes ☐ No

20. Have you handled/had contact with any aborted birth products of these animals?

Animal	**Since the start of the outbreak**	**Past 6 months**
Cattle	☐ Yes ☐ No	☐ Yes ☐ No
Sheep	☐ Yes ☐ No	☐ Yes ☐ No
Goats	☐ Yes ☐ No	☐ Yes ☐ No
Camels	☐ Yes ☐ No	☐ Yes ☐ No

21. Have you been involved in the slaughter (the act of killing) any of these livestock?

Animal	Since the start of the outbreak	Past 6 months
Cattle	☐ Yes ☐ No	☐ Yes ☐ No
Sheep	☐ Yes ☐ No	☐ Yes ☐ No
Goats	☐ Yes ☐ No	☐ Yes ☐ No
Camels	☐ Yes ☐ No	☐ Yes ☐ No

22. Have you been involved in the skinning of any of these livestock?

Animal	Since the start of the outbreak	Past 6 months
Cattle	☐ Yes ☐ No	☐ Yes ☐ No
Sheep	☐ Yes ☐ No	☐ Yes ☐ No
Goats	☐ Yes ☐ No	☐ Yes ☐ No
Camels	☐ Yes ☐ No	☐ Yes ☐ No

23. Have you been involved in removing the viscera of any of these livestock?

Animal	Since the start of the outbreak	Past 6 months
Cattle	☐ Yes ☐ No	☐ Yes ☐ No
Sheep	☐ Yes ☐ No	☐ Yes ☐ No
Goats	☐ Yes ☐ No	☐ Yes ☐ No
Camels	☐ Yes ☐ No	☐ Yes ☐ No

24. Have you been involved in the butcher of any of these livestock?

Animal	Since the start of the outbreak	Past 6 months
Cattle	☐ Yes ☐ No	☐ Yes ☐ No
Sheep	☐ Yes ☐ No	☐ Yes ☐ No
Goats	☐ Yes ☐ No	☐ Yes ☐ No
Camels	☐ Yes ☐ No	☐ Yes ☐ No

25. Last night, did you sleep under a mosquito net?
☐ Yes ☐ No

26. What is the condition of the net under which you slept
(1. Very good: <2 holes of <2cm; 2. OK: fewer than 10 holes <2cms; 3. Poor: more than 10 holes <2cms or 1 big hole). [ ]

27. What is your main occupation?

28. In a normal week (e.g. when not unwell) how many hours per day do you estimate you spend outside your house?
☐ 1- 4 hrs; ☐ 5-8 hrs; ☐9 – 12hrs, ☐>12 hrs

Physical exam [If appropriately qualified staff is present]

General description

☐ Wasted

Head

Nose

Throat

Neck

☐ Normal movement

Chest

☐ Murmur

Abdomen

Skin
☐ Jaundice ☐ Petechiae ☐ Purpura ☐ Ecchymosis

Lymphadenopathy

☐ Cervical ☐ Axillary ☐ Inguinal

Other

Ocular exam?

Annex 7: Rift Valley Fever Human Case Form for household

Case definitions

Suspect herd: A suspect herd will be any herd of cattle, sheep, goats or camels in which there are unusually high levels of abortion (e.g. in which 10% or more of currently pregnant animals suffer from abortions), an unusually high rate of still birth (e.g. in which 10% or more of pregnant animals give birth to dead offspring, or offspring that die soon after death), OR an unusually high mortality rate, particularly in young animals (e.g. death of 10% or more of this year's young stock). The suspect outbreak will be considered to have started from the first abortion, stillbirth or death that occurs following a period of unusually heavy rain in the household location.

Suspect animal: In a herd meeting the case definition for a RVF suspect herd, any animal that has aborted or given birth to dead or weak offspring will be considered a suspect RVF case. In addition, any animal that currently has or has had any of the following clinical signs since the onset of the outbreak will also be considered a case: severe listlessness (e.g. difficultly raising from recumbency or to move); prostration; abdominal pain; icterus, regurgitation; melaena or fetid diarrhea; and muco-purulent nasal or ocular discharge. Any animal death from the first onset of the outbreak without a known cause (e.g. slaughter, trauma etc) will also be classified as a suspect animal.

Outbreak information

1. Local outbreak tracking number: [ ]
2. First onset date: [ ][ ]/[ ][ ]/[ ][ ][ ][ ]
3. Last onset date: [ ][ ]/[ ][ ]/[ ][ ][ ][ ]
4. Investigation date: [ ][ ]/[ ][ ]/[ ][ ][ ][ ]

Setting information

5. Sub-village [ ]
6. Village [ ]
7. Ward [ ]
8. District [ ]
9. Household contact name: [ ]
10. Household contact telephone number: [ ]

11. GPS co-ordinates
    E/W[ ][ ]. [ ][ ][ ][ ][ ]
    S/N[ ][ ]. [ ][ ][ ][ ][ ]

12. Number of animals present at date outbreak began:

	Adult Males	Juvenile Males	Adult Females	Juvenile Females	Total
Cattle	[ ][ ][ ]	[ ][ ][ ]	[ ][ ][ ]	[ ][ ][ ]	[ ][ ][ ]
Sheep	[ ][ ][ ]	[ ][ ][ ]	[ ][ ][ ]	[ ][ ][ ]	[ ][ ][ ]
Goats	[ ][ ][ ]	[ ][ ][ ]	[ ][ ][ ]	[ ][ ][ ]	[ ][ ][ ]
Camels	[ ][ ][ ]	[ ][ ][ ]	[ ][ ][ ]	[ ][ ][ ]	[ ][ ][ ]

13. Was vaccination for RVF performed on animals in herd **before** date outbreak began?
☐Yes ☐No

14. If Yes, when was vaccination performed?
[ ][ ]/[ ][ ]/[ ][ ][ ][ ]

15. If Yes, who performed the vaccination
☐Farmer ☐ Government vets ☐ Other (specify) [ ]

16. Is the name of the vaccine that was used known? ☐ Yes ☐ No
Name: [ ]

17. How many animals were vaccinated?

	Adult Males	Juvenile Males	Adult Females	Juvenile Females	Total
Cattle	[ ][ ][ ]	[ ][ ][ ]	[ ][ ][ ]	[ ][ ][ ]	[ ][ ][ ]
Sheep	[ ][ ][ ]	[ ][ ][ ]	[ ][ ][ ]	[ ][ ][ ]	[ ][ ][ ]
Goats	[ ][ ][ ]	[ ][ ][ ]	[ ][ ][ ]	[ ][ ][ ]	[ ][ ][ ]

18. Have animals in this herd been vaccinated against other diseases in the past 24 months?
CBPP ☐ Yes ☐ No
Anthrax ☐ Yes ☐ No
FMD ☐ Yes ☐ No
LSD ☐ Yes ☐ No
Other ☐ Yes ☐ No
Name if Yes [ ]

19. How many people live in the affected household?

	<5 years	5-9 years	10-14 years	15-18 years	>18 years
Male	[ ][ ]	[ ][ ]	[ ][ ]	[ ][ ]	[ ][ ]
Female	[ ][ ]	[ ][ ]	[ ][ ]	[ ][ ]	[ ][ ]
Total	[ ][ ]	[ ][ ]	[ ][ ]	[ ][ ]	[ ][ ]

Clinical Information

20. Reason for report/investigation (Select all that apply)
☐High abortion rate ☐High stillbirth rate ☐High mortality rate
Other [ ]

21. Species affected
☐Cattle ☐Sheep ☐Goats ☐Camels ☐Other [ ]

22. First species affected
☐Cattle ☐Sheep ☐Goats ☐Camels ☐Other [ ]

23. Symptoms in affected animals (select all that apply)
(Bo = Cattle; Ov = Sheep; Go = Goats; Ca = Camel):

	Bo Ov Go Ca		**Bo OvGo Ca**
Abortion	☐☐☐☐	Diarrhoea	☐☐☐☐
Retained placenta	☐☐☐☐	Haemorrhagic diarrhoea	☐☐☐☐
Metritis	☐☐☐☐	Mucopurulent nasal discharge	☐☐☐☐
Stillbirth	☐☐☐☐	Tachypnoea	☐☐☐☐
Mortality (Adult)	☐☐☐☐	Listlessness	☐☐☐☐
Mortality (Young)	☐☐☐☐	Severe recumbency	☐☐☐☐
Milk drop	☐☐☐☐	Abdominal pain	☐☐☐☐
Excessive salivation	☐☐☐☐	Jaundice	☐☐☐☐
Staring coat	☐☐☐☐	Inappetance	☐☐☐☐
Regurgitation	☐☐☐☐	Haemorrhage from mouth/nares	☐☐☐☐

Please list any other clinical signs/symptoms described:

24. Total number of cases that meet case definition for suspect animal

	Adult Males	Juvenile Males	Adult Females	Juvenile Females	Total
Cattle	[ ][ ][ ]	[ ][ ][ ]	[ ][ ][ ]	[ ][ ][ ]	[ ][ ][ ]
Sheep	[ ][ ][ ]	[ ][ ][ ]	[ ][ ][ ]	[ ][ ][ ]	[ ][ ][ ]
Goats	[ ][ ][ ]	[ ][ ][ ]	[ ][ ][ ]	[ ][ ][ ]	[ ][ ][ ]
Camels	[ ][ ][ ]	[ ][ ][ ]	[ ][ ][ ]	[ ][ ][ ]	[ ][ ][ ]

25. Total number of deaths since first onset of symptoms

	Adult Males	Juvenile Males	Adult Females	Juvenile Females	Total
Cattle	[ ][ ][ ]	[ ][ ][ ]	[ ][ ][ ]	[ ][ ][ ]	[ ][ ][ ]
Sheep	[ ][ ][ ]	[ ][ ][ ]	[ ][ ][ ]	[ ][ ][ ]	[ ][ ][ ]
Goats	[ ][ ][ ]	[ ][ ][ ]	[ ][ ][ ]	[ ][ ][ ]	[ ][ ][ ]
Camels	[ ][ ][ ]	[ ][ ][ ]	[ ][ ][ ]	[ ][ ][ ]	[ ][ ][ ]

26. Number of abortions since first onset [ ][ ][ ]

27. Number stillbirths since first onset [ ][ ][ ]

28. Have you implemented any of following control measures in any animals since the onset of first symptoms?
☐ Vaccination
☐ Insecticide application (dip, spray or pour on)

29. If vaccination used, how many of the following were vaccinated

	Adult Males	Juvenile Males	Adult Females	Juvenile Females	Total
Cattle	[ ][ ][ ]	[ ][ ][ ]	[ ][ ][ ]	[ ][ ][ ]	[ ][ ][ ]
Sheep	[ ][ ][ ]	[ ][ ][ ]	[ ][ ][ ]	[ ][ ][ ]	[ ][ ][ ]
Goats	[ ][ ][ ]	[ ][ ][ ]	[ ][ ][ ]	[ ][ ][ ]	[ ][ ][ ]
Camels	[ ][ ][ ]	[ ][ ][ ]	[ ][ ][ ]	[ ][ ][ ]	[ ][ ][ ]

30. If vaccination used, who performed it?
☐ Farmer ☐ Government vets ☐ Other (specify) [ ]

31. Is the name of the vaccine that was used known? ☐ Yes ☐ No
Name: [ ]

32. If insecticide used, how many of the following were treated:

	Adult Males	Juvenile Males	Adult Females	Juvenile Females	Total
Cattle	[ ][ ][ ]	[ ][ ][ ]	[ ][ ][ ]	[ ][ ][ ]	[ ][ ][ ]
Sheep	[ ][ ][ ]	[ ][ ][ ]	[ ][ ][ ]	[ ][ ][ ]	[ ][ ][ ]
Goats	[ ][ ][ ]	[ ][ ][ ]	[ ][ ][ ]	[ ][ ][ ]	[ ][ ][ ]
Camels	[ ][ ][ ]	[ ][ ][ ]	[ ][ ][ ]	[ ][ ][ ]	[ ][ ][ ]

33. If insecticide used, who performed the treatment
☐ Farmer ☐ Government vets at central point ☐ Government vets at my home
☐ Other [ ]

34. Is the name of the insecticide that was used known? ☐ Yes ☐ No
Name: [ ]

Human cases

35. Has any individual in the household shown signs of **new** illness in the 4 weeks **before** the onset of first symptoms in animals?
☐Yes ☐No ☐ Don't know

36. If yes, how many people in different age groups were affected?

	<5 years	5-9 years	10-14 years	15-18 years	>18 years
Male	[ ][ ]	[ ][ ]	[ ][ ]	[ ][ ]	[ ][ ]
Female	[ ][ ]	[ ][ ]	[ ][ ]	[ ][ ]	[ ][ ]
Total	[ ][ ]	[ ][ ]	[ ][ ]	[ ][ ]	[ ][ ]

37. What were the signs/symptoms in affected individuals (select all that apply):
☐Fever ☐Chills ☐Headache
☐Photophobia ☐Weakness ☐Muscle pain

☐Joint pain ☐Nose bleeds ☐Red eyes
☐Rash ☐Vomiting/nausea ☐Abdominal pain
☐No appetite ☐Confusion ☐Dizziness
☐Neck stiffness ☐Change in vision ☐Vomiting blood
☐Bruising ☐Blood in stool ☐Severe neurologic disease (e.g. coma)
☐Severe ocular disease (e.g. blindness)

Please list any other clinical signs/symptoms described, or more detail on the severe disease:

38. When did these signs of new illness start (i.e. when was the first case)?
[ ][ ]/[ ][ ]/[ ][ ][ ][ ]

39. Has any individual in the household shown signs of **new** illness **since** the date of first onset?
☐ Yes ☐ No ☐ Don't know

40. If yes, how many people in different age groups were affected?

	<5 years	5-9 years	10-14 years	15-18 years	>18 years
Male	[ ][ ]	[ ][ ]	[ ][ ]	[ ][ ]	[ ][ ]
Female	[ ][ ]	[ ][ ]	[ ][ ]	[ ][ ]	[ ][ ]
Total	[ ][ ]	[ ][ ]	[ ][ ]	[ ][ ]	[ ][ ]

41. What were the signs/symptoms in affected individuals (select all that apply):
☐ Fever ☐ Chills ☐ Headache
☐ Photophobia ☐ Weakness ☐ Muscle pain
☐ Joint pain ☐ Nose bleeds ☐ Red eyes
☐ Rash ☐ Vomiting/nausea ☐ Abdominal pain
☐ No appetite ☐ Cough ☐ Difficulty breathing
☐ Confusion ☐ Dizziness ☐ Neck stiffness
☐ Change in vision ☐ Vomiting blood ☐ Bruising
☐ Blood in stool ☐ Severe neurologic disease (e.g. coma)
☐ Severe ocular disease (e.g. blindness)

Please list any other clinical signs/symptoms described, or more detail on the severe disease:

42. When did these signs of new illness start (i.e. when was the first case)?
[ ][ ]/[ ][ ]/[ ][ ][ ][ ]

Risk factors

Animal

43. In the past 6 months, have you taken your animals outside the immediate area around your household for grazing?
☐ Yes ☐ No

44. If yes, have animals grazed in areas **outside** your sub-village in the following time periods?*

	Previous 6 months	If yes, where did they graze	**4 weeks before onset of first case**	If yes, where did they graze
Cattle	☐ Yes ☐ No ☐ NA	Sub-village [ ] Village [ ] District [ ]	☐ Yes ☐ No	Sub-village [ ] Village [ ] District [ ]
Sheep/ Goats	☐ Yes ☐ No ☐ NA	Sub-village [ ] Village [ ] District [ ]	☐ Yes ☐ No	Sub-village [ ] Village [ ] District [ ]
Camels	☐ Yes ☐ No ☐ NA	Sub-village [ ] Village [ ] District [ ]	☐ Yes ☐ No	Sub-village [ ] Village [ ] District [ ]

*Please fill in supplementary forms if there are additional grazing sites in different sub-villages to those listed

45. In the4 weeks prior to the date of first onset, have your cattle grazed in areas at the same time as any of the following wildlife species:
☐Wildebeest ☐Impala ☐Gazelles ☐Buffalo ☐Elephant ☐Warthogs
☐Other (specify) [ ]

46. In the 4 weeks prior to the date of first onset, have your sheep or goats grazed in areas at the same time as any of the following wildlife species:
☐Wildebeest ☐Impala ☐Gazelles ☐Buffalo ☐Elephant ☐Warthogs
☐Other [ ]

47. Have there been areas of standing water in, or immediately around, this household in the 4 weeks prior to the date of first symptoms in livestock
☐ Yes ☐ No ☐ Don't know

48. Have there been areas of standing water in the areas that your animals have been grazing in the 4 weeks prior to the date of first onset?
☐ Yes ☐ No ☐ Don't know

49. For the following time periods prior to date of first symptoms, have you introduced any new animals into your herd from an outside herd*

	Previous 6 months	If yes, where did animals originate	**4 weeks before onset of first case**	If yes, where did animals originate
Cattle	☐ Yes ☐ No ☐ NA	Sub-village [ ] Village [ ] District [ ] Don't know ☐	☐ Yes ☐ No	Sub-village [ ] Village [ ] District [ ]
Sheep	☐ Yes ☐ No ☐ NA	Sub-village [ ] Village [ ] District [ ] Don't know ☐	☐ Yes ☐ No	Sub-village [ ] Village [ ] District [ ]
Goat	☐ Yes ☐ No ☐ NA	Sub-village [ ] Village [ ] District [ ] Don't know ☐	☐ Yes ☐ No	Sub-village [ ] Village [ ] District [ ] Don't know ☐
Camels	☐ Yes ☐ No ☐ NA	Sub-village [ ] Village [ ] District [ ] Don't know ☐	☐ Yes ☐ No	Sub-village [ ] Village [ ] District [ ] Don't know ☐

*Please fill in supplementary forms if additional sources to those sub-villages listed

50. Since date of first onset of symptoms, have animals been sold or given away *

		If yes, where did the animals go
Cattle	☐ Yes ☐ No ☐ NA	Sub-village [ ] Village [ ] District [ ]
Sheep	☐ Yes ☐ No ☐ NA	Sub-village [ ] Village [ ] District [ ]
Goats	☐ Yes ☐ No ☐ NA	Sub-village [ ] Village [ ] District [ ]

Camels	☐ Yes ☐ No ☐ NA	Sub-village [ ] Village [ ] District [ ]

*Please fill in supplementary forms if additional destinations to those sub-villages listed

Human

51. What is the main water source for this household at the moment (excluding rain water)
    - ☐ Piped
    - ☐ Borehole
    - ☐ Lake/pond/dam
    - ☐ Other (specify) [ ]
    - ☐ Well
    - ☐ River/stream
    - ☐ Spring

52. How long does it take to walk (one way) to this water source?
    Time [ ][ ] Unit: ☐ Hours ☐ Minutes

53. How many mosquito nets are there in the household?

Total number of nets	Total number of sleeping places	Number of sleeping places **with** nets	Number of sleeping places **without** nets

54. Are nets being used at night (ask: were they used last night?) ☐ Yes ☐ No

55. What is the condition of the nets (Very good: <2 holes of <2cm; OK: fewer than 10 holes <2cms; Poor: more than 10 holes <2cms or 1 big hole). Who slept under each net last night: Adult, pregnant woman, child over 5, child under 5. Record multiple if bed shared (from: http://www.againstmalaria.com)

	Condition of net	Who slept under net		Condition of net	Who slept under net
Net 1			Net 6		
Net 2			Net 7		
Net 3			Net 8		
Net 4			Net 9		
Net 5			Net 10		

56. What has happened with the carcasses of dead animals since the onset of the outbreak?
    - Left where they lie ☐
    - Burned ☐
    - Buried ☐
    - Butchered for meat ☐
    - No animals have died ☐
    - Other [ ]

57. Have any live animals been slaughtered and butchered at the household in the time period since the onset of first symptoms in animals
☐ Yes ☐ No

58. If yes, was the meat consumed by members of the household?
☐ Yes ☐ No

59. Have milk products from animals been consumed by members of this household since the onset of first symptoms?
☐ Yes ☐ No

60. Has any individual in this household consumed any of the following livestock products since the onset of symptoms in animals?

Raw milk from cattle	☐
Raw milk from sheep or goats	☐
Yoghurt made from raw milk or raw starter culture from cattle	☐
Yoghurt made from raw milk or raw starter culture from sheep or goats	☐
Raw blood	☐
Raw beef	☐
Raw goat/lamb/mutton	☐

61. Have you noticed an unusual number of mosquitoes for this time of year in and around the household (e.g. mosquito swarms)?
☐ Yes ☐ No ☐ Don't know

Laboratory Information
Have samples been collected for laboratory analysis
☐ Yes ☐ No

Specify number of animals sampled

	Cattle	Goats	Sheep	Camels
For serology (whole blood in Plain tubes)				
For PCR (whole blood in EDTA)				
For virus isolation (whole blood, tissues, swabs)				
Other Describe:				

Control measures implemented

Vaccination	☐Name [	]
Movement restrictions	☐	
Animals treated with insecticide	☐ Name [	]
Education on human exposure	☐	
Other	☐ [	]

Observation on mosquito breeding sites:

Are any of the following observed in the household or 100 metres around it? (Select all that apply):

Dam		Tires	
Pond		Buckets	
Lake		Livestock feeding/watering trays	
Puddle		Clay pots	
Manmade holes in ground		Pit latrine	
Open water storage tanks		Matuta (raised ridges on agricultural plots)	
Ditch		Rice paddy	
Swampy area		Any other object/container that may contain water (Describe …….)	

Annex 8: Comprehensive Animal Disease Surveillance Form

Instructions:
One form is to be completed for each focus/incident of disease reported. The questionnaire is to be completed clearly and legibly, and the shaded areas **must** be filled in.

(i) Example of Report Form for use by Animal Health Assistants

Name:_____ **District:**_____ **Year:**_____ **Month:**_____

Village:		Disease	Species	#Cases	#Dead	Main sign
No. cattle						
No. sheep						
No. goats						
No. camels						
No. poultry						

(ii) Example of reporting form (passive surveillance) for use by veterinarians and technical-level field staff

Instructions:
One form is to be completed for each focus/incident of disease reported. The questionnaire is to be completed clearly and legibly, and the shaded areas **must** be filled in.

Province/Region (4-letter code)		District (6-letter code)	

Locality		Grid Reference	Lat		Long	

Date	Year		Month		Day		Farmer name	

Disease/Diagnosis		Differential Diagnosis	

Nature of Diagnosis	Suspected		Clinical		Smear		PM		Laboratory	

SPECIES: (Bov/Ov/Cap etc)			AFFECTED POPULATION (mark the correct word)	SEX	AGE	SYSTEM	
				male	neonate	dairy	beef
NUMBER Cases (total affected)				female	juvenile	mixed	trad
				castrate	subadult	intensive	
NUMBER Dead				all	adult	extensive	
NUMBER At Risk				?	all	other	
					?	?	

Details of reporting officer:

Surname, initials:		Position	VET	VET AUX/PARAVET	LAY

(iii) Alternative Specimen Report Form (passive surveillance)

Background information

Date		Farming system	
Reporting Officer		Comments and relevant background information	

Geographic information

Region		District		Locality	

Species affected

Species affected (check)	*Bovine*	*Ovine*	*Caprine*	*Porcine*	*Other (specify)*

Numbers involved

No. Cases		No. Deaths	
No. at Risk		No. Examined	

Categories most affected

Age category (check)	*neonate*	*Juvenile*	*subadult*	*adult*	*all*	*unknown*
Sex category (check)	*male*	*Female*	*neutered*	*both*	*unknown*	

Signs and lesions observed

Clinical signs	
Post-mortem lesions	

Actions implemented

Treatments (list)				
Other (check)	*Vaccination*	*Dip*	*Quarantine*	*Cordon*
Samples sent to (name lab)				
Date of submission		Type of sample/s		

Details of Diagnosis

Tentative Diagnosis		Differential Diagnosis	

Basis for diagnosis (check)	*Rumour*	*Clinical history*	*Clinical signs*	*Blood smear*	*Laboratory test*

(iv) Example of reporting form for use in sero-surveillance

First part for use by field staff Survey ID _____

Survey officer details

Category:	VET	AHI	**Initials:**		**Date** (dd/mm/yy):	

Farm/Locality Details

Province/ Region		District		Locality name	

Details and history of animals sampled

Species		Breed/Type		Sex category	M	F	Castr	A		
Age category	Younger than wean		Older than wean		Adults	All				
Condition of animals	G	M	P	Condition of veld			G	M	P	
Vaccinations past year				Diseases past year						
No. of serum samples taken										
Animals moved in from?				Animals moved to?						

Disease being surveyed

Second part for completion by laboratory staff

Lab. reference number:_____ Technician:_____ Veterinarian:_____

Disease:					
Test:		Sensitivity:		Specificity:	
No. negative:					
No. suspicious:					
No. positive:					
Remarks:					

(v) Example of reporting form for use at abattoirs/slaughter slab (laboratory results entered on the reverse of the form)

ABATTOIR/SLAUGHTER SLAB REPORT FORM

Instructions:

This form is completed when:

1. Any transboundary/other notifiable disease is diagnosed (even if only one case)
2. When a consignment has more than a 5–10% incidence of other diseases of importance as identified by the Department of Veterinary Services.
3. Any sample is sent to the Laboratory for whatever reason.

   Where two different conditions are diagnosed in the same consignment, two separate forms must be completed.

   The reverse side of the form is to be filled in when a sample is submitted to a laboratory. the original must accompany the sample to the laboratory, and a duplicate must be sent to Head Office for computerisation.

   The reference number refers to any numeric series of your own choice, eg. 002/1996. These numbers must follow one another successively on successive forms, and must not be abattoir consignment number

The shaded boxes must be filled in.

Date	Abattoir (abbreviation)	Officer initials (1st, 2nd & last)	Reference number
Owner of Animals	Locality/Farm Name	Province/Region	District
Species	Condition suspected or diagnosed		Differential Diagnosis
Indicate whether it was diagnosed:	Ante-Mortem	Or	Post-Mortem
No. of animals in consignment:	No. affected	Age of affected (weeks, months, years, 2t, 3T, all ages)	
Sex of affected (M = male, F = female, B = both)		Other comments:	
If you conducted any tests, what were your findings:			
Please mark with an X if samples to lab:			

Reverse of abattoir and field disease report form:

DETAILS FOR SPECIMEN(S) - LABORATORY

Number & type of specimen(s):	Time collected (only for sensitive organisms):	In case of RABIES, was there any human contact:
		[Yes] [No]
		If Yes, how many people affected .....
	Examination(s) requested:	Owner's name on reverse of this form:
		Owner's address:
		Owner's tel. number:
	ID and reference number if from satellite laboratory:	If not official - does lab have permission to do extra test at owner's
		cost: [Yes] [No]
		Costing: [Official]
		[Post price list]

FOR LABORATORY USE ONLY					
Date samples received	Lab number	Number copies required		Distribution	
Sections	micro/path	path	chem tox	Referral centres (specify)	Add. examination decided upon
	nutr	virol	serol		
Is this a follow-up report	Yes	No	Another report to follow	Yes	No

LAB RESULT (FREE FORMAT)	
LABORATORY COMMENT TO FIELD VET:	
PATHOLOGY	
Blood smear:	Respiratory system:
Eggs per gram:	Central nervous system:
General:	Musculoskeletal system:
Body cavities:	Skin:
Gastrointestinal tract:	Other:
Liver:	Pathological diagnosis:
Urogenital system:	Aetiological diagnosis:
Circulatory system:	Differential diagnosis:
Lymphnodes:	

www.fao.org/docrep/004/x3331E02.htm#appII

Annex 9: Animal Disease Field Investigation Form

General Information				
Name of livestock keeper		Telephone contact		
Village/location		Investigation date		
Division/subcounty/parish		Date of outbreak onset		
District/county				
GPS coordinates	Lat. Long.	Elevation (meters)		
Herd/flock structure				
Species	Young	Sub-adult	Adult	Total
Cattle				
Sheep				
Goats				
Pigs				
Poultry				
Fish				
Bees				
Others (specify)				
Animal information				
Species affected		Total number of animals	Male Female	
Sex	Male Female	No. affected	Male Female	
Age	Adult Sub-adult Young	No. dead	Adult Sub-adult Young	
Breed		New animal introductions into the farm	Less than a week Less than a month More than a month	
History of vaccination/treatment				
Disease	Date of vaccination	No. vaccinated	Vaccine used	
FMD				
BRUCELLOSIS				
RVF				
ASF				
Others (specify)				

Clinical signs							
Clinical symptom	Bo	Ov	Cp	Clinical symptom	Bo	Ov	Cp
Abortion				Diarrhoea			
Retained placenta				Haemorrhagic diarrhoea			
Metritis				Mucopurulent nasal discharges			
Stillbirth				Tachypnoea			
Mortality (adult)				Listlessness			

Mortality (young)		Severe recumbency	
Milk drop		Abdominal pain	
Excessive salivation		Jaundice	
Staring coat		1. Inappetence	
Regurgitation		Haemorrhages from mouth/ nares	
Any other clinical signs/ symptoms (specify)			
Management/husbandry			
Animal species	Date of last dipping/ spraying	No. dipped/sprayed	Type of pesticide
Cattle			
Sheep			
Goats			
Pigs			
Others (specify)			
Animal Contacts			
Animal species	Communal grazing field (Y/N)	Watering /dip tank/water tank / market point (Tick)	Wildlife interface (Y/N)
Cattle			
Sheep			
Goats			
Pigs			
Others (Specify)			

This form supports the Field Manual on Disease Investigation and Diagnosis for Transboundary Animal Diseases and Zoonoses in Eastern Africa.

Annex 10. Animal Disease Investigation Report

The following form should be completed promptly by the field investigator and distributed by email to the local veterinary officer and the Chief veterinary officer

1. Name of animal owner/manager:
2. Physical address where the animals are located:
3. Information that triggered the investigation *(include the source of reports of information)**:***
4. History (*include background on the suspected outbreak, date of onset, species affected, significant clinical manifestations, numbers of sick and dead animals, occurrence area):*
5. Findings of epidemiology, clinical examinations and other non-clinical findings that are important. **Epidemiology** *(descriptive statistics, morbidity and mortality rates, trace-backs and trace-forwards, risk factors associated with outbreak, e.g, presence of ticks in a suspected tick-borne infection, etc.):* **Clinical examination** (*observed signs and findings from animal examinations):* **Non-clinical, important findings** *(farming practices and system, e.g. zero/semigrazed, sedentary, nomadic, etc.)*

6. Samples collected and name of veterinary laboratory: (list *specific samples collected from live animals and necropsy, and the name of the veterinary laboratory receiving the samples).*
7. Differential diagnosis (rule-outs) (*list animal diseases in order of the most likely to the least likely based upon the field investigation findings)***:**
8. Recommendations and necessary follow-up actions *(include recommended biosecurity and disease control measures recommended to the farmer, including isolation of the affected animals from the rest of the herd, burial of affected carcasses, and cleaning and disinfection of premises, etc.)*
Name of Field Investigator:
Date:

This form supports the *Field Manual on Disease Investigation and Diagnosis for Transboundary Animal Diseases and Zoonoses in Eastern Africa.*

Annex 11: Animal Clinical Examination Form

Date:				**Herd number**		**Name of owner**											**Name of village**			**Admin area**
Animal No.	Species			Sex		Dentition (pairs perm incisors)							Temp-^{0}C	Ocular discharge	Nasal discharge	Oral lesions	Respiratory signs	Faeces	Lameness, foot lesions	Other clinical signs	Suspected diagnosis
	Goat	Sheep	Cattle	M	F	0	1	2	3	4	4*	4**									

Source: The African Union Inter-African Bureau for Animal Resources. This form supports the Field Manual on Disease Investigation and Diagnosis for Transboundary Animal Diseases and Zoonoses in Eastern Africa

Annex 12: Blood sample collection form

CATTLE/ SHEEP/ GOATS

Date of sampling	Herd No.				Name of owner							Name of village				Admin area		
Sample no.	Species (tick box)			Breed (name)	Sex (tick box)		Dentition (pairs permanent incisors)					Origin Born in heard – tick box Bought in – date, source			Clinical signs (describe)	Vaccinations (date of vaccination/ N=No/ U=unknown		
	C	S	G		M	F	0	1	2	3	4	4*	Born in heard	Date		PPR	FMD	RVF

This form supports the Field Manual on Disease investigation and Diagnosis for Transboundary Animal Diseases and Zoonoses in Eastern Africa

Annex 13: Laboratory sample submission form

This annex supports the *Field Manual on Disease Investigation and Diagnosis for Transboundary Animal Diseases and Zoonoses in Eastern Africa.*

LABORATORY SAMPLE SUBMISSION FORM

Laboratory Card: No……..

Name and address of the Laboratory: ……

Sample field ID:……..……..Date of submission:……..……

Recipient's initials at the lab: ……..……..

For lab use only:

Laboratory Id: …….. Date received: ……..……..……

Submitters Name: ……..…… Address :..... Phone :,……..……

E mail: ……..……

District……..…County/Ward/ Municipality ……..……..……

Parish ……..……village ……..……

Farm Details:

Name of farm: ……..…… Owner: ……..……..…… W/Man……..…

Location: ……..…… Village: ……..……

Condition at delivery:

Room temperature: …….. Cold ……..…… Frozen……..… Dry Ice ……..

If viral specimen: is it in transport media or not?……..……

Tests requested for:

General microscopy _____ ELISA screening/ diagnostic ……..…….. PCR ……..……

Affected animal history: ……..……

Clinicalsignsontheanimals/animals:……

……..……..……

Vaccination history ……..…… Treatments given ……..

Duration of outbreak ……..…… Nos dead ……..……

Signed by Client/date: ……..……..

VETERINARY LABORATORIES - LABORATORY CARD Reg. No.: CVL/PATH/REC/FORM001
Effective date: 30/03/2017. **Edition:** 002 **Page** 1 **Authorized by:**

FOR LABORATORY USE ONLY			
Case No:	Date Received:		M.R. No.:
Veterinarian:		Reception officer:	
1. Client details			
Submitter Name:		Submitter's Telephone:	
Submitted via:		Walk-in Courier Post	
Owner's Name:		Owner's Address:	
Owner's Phone:		Owner's E-mail:	
2. Farm details			
County:		Subcounty	
Ward		Location	
Sublocation		Village	
3. Sample details			
Species:		Sample submitted:	
Condition:	Room temp. Cool Frozen	In transport media?	Yes
Date & time collected:		Date & time dispatched:	
Test(s) requested:			
Test Purpose:		Diagnosis Screening Confirmation Export Surveillance Research	
4. Affected animal's history			
Age of animal:	Sex:		Breed:
Clinical signs:			
Length of illness:		Temperature:	
Hatchery/Source:		Feeds:	
Vaccination history:		Treatment given:	
5. Affected herd/flock's history			
No. of animals:	In herd/flock:	Affected:	Dead:
Clinical signs:			
Duration of outbreak:			
Notes:			
I confirm that this is a true representation of the information I have provided to CVL, .		**Client Signature:**	

Annex 14. Animal Disease Field Investigation Form: Preliminary Report for Animal Owner/Manager

This form is to be completed promptly by the field investigator with one copy provided to the farmer and one copy to the local veterinary officer

General information			
Name of livestock keeper		Telephone contact	
Village/location			
Division/subcounty/parish		Date of outbreak onset	
District/county			
Samples collected			
Sample type	**Animals**	**Lab tests to be conducted**	
Major findings on farm			
Action taken/advice given to farmer			
Isolation			
Vaccination			
Treatment			
Improve on biosecurity			
Bury/burn carcass			
Improve general husbandry practice			
Report new cases immediately			
Others			
Name of investigator			
Date			

This annex supports the field manual on disease investigation and diagnosis for transboundary animal diseases and zoonoses in Eastern Africa

Annex 15. Animal Diseases Surveillance Field Report Form

THE UNITED REPUBLIC OF TANZANIA
MINISTRY OF AGRICULTURE, LIVESTOCK AND FISHERIES - VETERINARY SERVICES

ANIMAL DISEASES SURVEILLANCE FIELD REPORT

ZONE		**REGION**	
DISTRICT		**WORK STATION**	
VILLAGE			

GRID REFERENCE:

LATITUDE	**LONGITUDE**

NAME OF DISEASE / CONDITION | **FOLLOW UP REPORT**

DATE OF OBSERVATION	SPECIES AFFECTED	EPIDEMIOLOGY				DISEASE CONTROL	
		NUMBER OF ANIMALS					
		At risk (total in the village/ epidemiological unit)	Cases	Deaths	Vaccinated	Treated	Destroyed

DIAGNOSIS		**AFFECTED POPULATION**				**FARMING SYSTEM**	
BASIS OF DIAGNOSIS	√ or ×	**SEX**		**AGE**		**TYPE**	**No.**
		TYPE	**No.**	**TYPE**	**No.**	Agro-pastoral	
Suspected		All		Neonate		Transhumant	
Clinical		Female		Juvenile		Intensive smallholder	
Laboratory		Male		Sub adult		Intensive commercial	
Post-mortem		Castrate or neutered		Adults		Ranching	
Meat inspection				All		Free range	
Rumour						Broiler	
Owner's claim						Layers	

Other control measures and actions	**Main clinical and Post mortem features**

Epidemiology of the disease (source of infection, rate of spread, reservoirs, animal movement *etc*)

Signature: _____ Full Name: _____

Annex 16: Veterinary Services Abattoir Report

UNITED REPUBLIC OF TANZANIA
MINISTRY OF AGRICULTURE, LIVESTOCK AND FISHERIES

LIVESTOCK SECTOR
VETERINARY SERVICES
ABATTOIR REPORT

ZONE		REGION	
DISTRICT			
VILLAGE		Date of inspection	
LAT			
GRD REF.			
LONG			
NAME OF ABATTOIR			

Owner of Animals & Address

	Origin of Animals
Region	
District	
Village	
Lat.	
GRID REF Long.	

Species of Animals	
No. of Animals Slaughtered	

No. of Animals affected	

Age affected	
All	
Adult	
6 months – 2 years	

Sex most effected (please tick)	
All	
Female	
Male	
Castrates	

Sign and lesions observed after slaughter*

Disease suspected/Diagnosed

Signature: _____ Full name: _____

Position of meat inspector:

Vet Dr.

Vet Tech

Annex 17. Rift Valley Fever Sample Collection Form for Animals

Date: [ ][ ]/[ ][ ]/[ ][ ][ ][ ]

Local outbreak tracking number: [ ]

NB This **MUST** match tracking number on household Outbreak Report Form

Animal unique number: [ ]

Name of sampler:

Animal Description

1. Species
   ☐ Cattle ☐ Sheep ☐ Goat ☐ Camel☐ Other [ ]

2. Breed
   ☐ Exotic☐ Indigenous ☐ Cross

3. Sex
   ☐ Male ☐ Female

4. If female, is this animal currently pregnant
   ☐ Yes ☐ No☐ DN

5. If female, are you currently collecting milk (e.g. did you milk her yesterday)?
   ☐ Yes ☐ No

6. Is this milk being used for any of the following:
   ☐ Consumption in the household ☐ Given to neighbours ☐ Sold

7. Reported animal age: [ ][ ][ ] ☐ Days ☐ Months ☐ Years

8. Dentition:
   ☐ Temporary teeth ☐ 2 tooth
   ☐ 4 tooth ☐ 6 tooth
   ☐ Full mouth ☐ Full and worn

9. Animal origin:
   ☐ Born at household
   ☐ Purchased
   ☐ Other [ ]

10. How long ago was this animal born/introduced into the household
    [ ][ ][ ] ☐ Days ☐ Months ☐ Years previously

Clinical presentation

11. Rectal temperature: [ ][ ].[ ]°C

12. Body condition score:
    - ☐ 1 – Emaciated
    - ☐ 2 – Thin
    - ☐ 3 – Average
    - ☐ 4 – Heavy
    - ☐ 5 – Fat

13. Coat condition
    ☐ Normal ☐ Staring

14. Is there any evidence of enlargement of the following lymph nodes:
    - ☐ Parotid LN
    - ☐ Pre-scapular LN
    - ☐ Pre-crural LN

15. Is this animal considered a suspect RVF case?
    ☐ Yes ☐ No

16. What signs and symptoms of illness does this animal have (select all that apply):

☐ No signs of illness	☐ Prostration
☐Listlessness	☐ Ocular icterus
☐Abortion	☐Retained placenta
☐Metritis	☐Stillbirth
☐Milk drop	☐Excessive salivation
☐ Ocular discharge	☐Diarrhoea
☐Haemorrhagic diarrhoea	☐Fetid diarrhoea
☐Mucopurulent nasal discharges	☐Tachypnoea
☐Severe recumbency	☐Abdominal pain
☐Inappetence	☐Regurgitation
☐Haemorrhage from mouth/nares	☐ Other

Please describe any other clinical signs or symptoms or provide more detail:

17. Has this animal ever been vaccinated?
    ☐ Yes ☐ No ☐ Don't Know

18. If yes, against which disease?
    - ☐ RVF If yes, when: [ ][ ][ ] ☐ Days ☐ Months ☐ Years previously
    - ☐ PPR If yes, when: [ ][ ][ ] ☐ Days ☐ Months ☐ Years previously
    - ☐ CBPP If yes, when: [ ][ ][ ] ☐ Days ☐ Months ☐ Years previously
    - ☐ Anthrax If yes, when: [ ][ ][ ] ☐ Days ☐ Months ☐ Years previously
    - ☐ FMD If yes, when: [ ][ ][ ] ☐ Days ☐ Months ☐ Years previously
    - ☐ Other If yes, when: [ ][ ][ ] ☐ Days ☐ Months ☐ Years previously

Name: [ ]

Post mortem comments

External findings

Body condition

Gastro-intestinal system (position of viscera, external surface of viscera, type/volume effusion)

Spleen (external and internal appearance)

Liver (external and internal appearance)

Samples collected

☐Venous blood (red top)
☐Venous blood (EDTA)
☐Liver
☐Spleen
☐Placenta
☐Fetal material
☐Mosquitoes (from farm premise)
☐ Other
Describe: [ ]
Comments:

Annex 18: List of members who participated in the meetings of document development

1.	Dr. Janneth Mghamba	MoHCDGEC
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3.	Mr. Godson Markalio	MoHCDGEC
4.	Dr. George Cosmas	MoHCDGEC
5.	Dr. Vida Mbaga	MoHCDGEC
6.	Dr. Rogath Kishimba	MoHCDGEC
7.	Dr. Faraja Msemwa	MoHCDGEC
8.	Dr. Martin Ruheta	MoLF
9)	Ms. Joyce Daffa	MoLF
10.	Dr. Selemani Makungu	MoLF
11.	Dr. Sero H. Luwongo	MoLF
12.	Dr. Emmanuel Swai	MoLF
13.	Dr. Deusdedit K. Tinuga	MoLF
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18.	Dr. Henry B. Magwisha	TVLA
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21.	Dr. Justine Assenga	PMO - OHCD
22.	Mr. Harrison Chinyuka	PMO- OHCD
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26.	Dr. Togolai J. Mbilu	NIMR
27.	Dr Paul E. Kazyoba	NIMR
28.	Dr. Marycelina Mubi	MUHAS
29.	Prof. Japhet Killewo	MUHAS/OHCEA
30.	Dr. Jeremia Seni	CUHAS
31.	Prof. Mahulilio Kipanyula	SUA
32.	Dr. Robert Machang'u	SUA
33.	Dr. Coletha Mathew	SUA
34.	Dr. Hezron Nonga	SUA
35.	Prof. Rudovick Kazwala	SUA

36.	Prof. Esron Karimuribo	SUA
37.	Dr. Justin Semwacha	TAWIRI
38.	Dr Epaphras Alex Muse	TANAPA
39.	Dr. Said Sheuya	PATH
40.	Ms. Lusungu Ngailo	AMREF
41.	Dr. Kunda John	P and R
42.	Dr. Alphoncina Nanai	WHO
43.	Dr. Peter Mmbuji	CDC
44.	Dr. Niwael Mtui-Malamsha	FAO
45.	Dr. Raphael Sallu	FAO
46.	Dr. Zelalem Tadesse	FAO
47.	Dr. Moses Ole Neselle	FAO
48.	Prof. Fasina Folorunso	FAO

NOTES

Food and Agriculture Organization of the United Nations

USAID FROM THE AMERICAN PEOPLE

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