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*Standard Methods and Procedures (SMPs)
for Control of
Lumpy Skin Disease (LSD)
in the Greater Horn of Africa*



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Foreword

The arid and semi-arid lands of the Horn of Africa (HOA) are home to poor and vulnerable populations, the majority of whom rely on livestock to sustain livelihoods. However, the performance of livestock in the region remains low, given the widespread occurrence of transboundary animal diseases (TADs) that are responsible for production losses, and reduced performance of intra- and inter-regional trade in livestock and livestock products. Because of disease outbreaks, live animal exports have been severely constrained during the past two decades, by bans imposed by importing countries to reduce risks associated with these diseases.

To address the negative impact of TADs on livestock trade, AU-IBAR and ICPALD together with the participating countries in the region, with financial support from the United States Agency for International Development (USAID), have developed a framework to support harmonization and coordination of the control of the diseases, referred to as the Standard Methods and Procedures (SMP) Approach. The SMP approach involves strengthening capacities of member states for surveillance, epidemiology, laboratory diagnostics, disease control programmes, and communications. The fundamental aspect of the approach is the linking of disease prevention and control activities in a country, to a set of regional minimum standards and procedures for TADs prevention and control in line with the World Organization for Animal Health (OIE) standards.

The minimum standards, procedures, methods and goals for a particular disease are contained in an individual SMPs. It deals with subject areas of surveillance, laboratory procedures and disease control, and states minimum standards, procedures and goals that must be met for harmonized regional control of a disease.

This booklet presents the SMPs for Lumpy Skin Disease (LSD), and deals with the specific dynamics of LSD prevention and control in the Greater Horn of Africa (GHOA).

The compilation of the materials in the SMPs for LSD, taking into consideration the characteristics of the Greater Horn of Africa, was made possible by technical experts from the region with technical support from AU-IBAR, FAO, OIE and AU-PANVAC. AU-IBAR is indebted to many scientists who reviewed the document and especially to Dr. James Wabacha the coordinator of the SMP-AH project for coordinating the preparation of the SMPs.

The SMPs for LSD targets field veterinary personnel, policy makers, laboratory personnel and veterinary students in the region.

Professor Ahmed El-Sawalhy

Director

African Union Inter-African Bureau for Animal Resources (AU-IBAR)

1.0 Introduction

1.1 Standard Methods and Procedures (SMP)

The Standard Methods and Procedures (SMP) approach is designed to guide and harmonize the work of Departments of Veterinary Services (DVSs) in the Greater Horn of Africa (GHOA) region in their approach to the control of trade-related Transboundary Animal Diseases (TADs).

Standard Methods and Procedures are operational protocols to create uniformity in animal disease detection, diagnostic and control procedures throughout the Greater Horn of Africa (GHOA). An individual SMP is a protocol for control of a given disease that outlines the measures that must be undertaken. The SMP deals with subject areas of surveillance, epidemiology, laboratory procedures, and disease control and states minimum standards, procedures, and goals that must be met for a harmonized regional control of a disease. It is supported with details as specified in Standard Operating Procedures (SOPS) for each subject area that are designed to fit the structure and capabilities of a given nation.

An SMP is a functional, action-oriented document and is not intended to provide a detailed description of the disease. It is also a live and flexible document and can be changed as new science and new techniques for control are discovered.

This SMP deals with the specific dynamics of Lumpy skin disease (LSD) and specifies standards, methods, and procedures for surveillance, management, diagnosis and control of the disease.

1.2. Lumpy skin disease

Lumpy skin disease (LSD) is endemic in most areas of the GHOA and has been reported in other areas of Africa. This disease, caused by a poxvirus, is an infectious, eruptive and occasionally fatal disease of cattle characterized by nodules on the skin. Cattle and water buffaloes are the only livestock species affected, with high morbidity rates but low mortality (around 1 per cent). Death rates are greater among calves. It causes damage to hides, loss of milk and beef production, abortions and sterility. It is thus a disease with serious socio-economic status.

The incubation varies from 5 to 28 days in natural conditions. Biting flies and mosquitoes transmit the virus. Milk yield is decreased; temperature rises, and 10 days later nodules or lumps appear on the skin, initially circular, flat and firm. These are raised about 3mm above the skin and are up to 0.7 mm in diameter, and can occur all over the body. The

hair rises on the nodules. The udder or testicles are swollen and tender. Yellowish-grey lesions occur on the tongue, on the cheeks, on the hard palate, gums and in the nostrils. There is salivation and nasal discharge. The penis and prepuce, or the vagina and vestibule may be affected. The superficial lymph nodes are swollen, and there may be oedema of the limbs. Also there is subcutaneous swelling of the brisket and abdominal wall. Cellulitis and sloughing of large areas of skin occur. Sterility in bulls and abortion in cows may occur, and the disease can affect almost all organs. There are nodules in lungs at post-mortem examination. Bronchopneumonia may be present. Haemorrhages may occur in the spleen or the liver and rumen. Raised nodules may occur on the mucous membrane of the three stomachs. Ulcers form in the abomasum, as well as inflammation and haemorrhages in the intestines. The swollen skin nodules may separate from the health skin and dry and harden to form a “sitfast”. If shed, an ulcerative nodule remains.

For the purpose of execution of this SMP, the LSD disease status in the GHoA will be categorized into three main areas: Area of no known disease occurrence; LSD disease free area and LSD endemic area.

Contingency planning for control of LSD is based on effective control of any outbreak of LSD. It is important to develop capacity for surveillance especially Participatory Disease Search (PDS), risk analysis, information management and laboratory diagnosis in order to respond appropriately to any outbreak.

2.0 Definitions

For common understanding of terminology, the following definitions will be used.

2.1 Surveillance and Epidemiology

Surveillance

Means the systematic ongoing collection, collation, and analysis of information related to animal health and the timely dissemination of information so that action can be taken.

Passive surveillance

This is a method of surveillance that enables veterinary authorities to collect animal health data and information from disease reporting stakeholders.

Active surveillance

This is a method of surveillance in which epidemiological information is collected through purposeful and planned interventions.

Syndromic surveillance

This is a surveillance approach based on observation of the main signs of disease.

Clinical surveillance

This is a surveillance approach to investigate the occurrence of diseases based on observations of clinical signs.

Targeted surveillance

A form of active surveillance based on probability of occurrence of disease in a given area and/or species.

Risk-Based surveillance

A form of active surveillance that focuses on a certain area or livestock population based on perceived level of threat, risk and/or consequences.

Participatory Disease Surveillance

This is a form of active surveillance that uses participatory approaches in search of disease, including input from local livestock producers and others in the livestock value chain.

Epidemiological Unit

This is a group of animals with a defined relationship sharing common likelihood of exposure to a disease.

Predisposing factors

Predisposing factors are a variety of situations that harbor or promote disease.

Risk mapping

A tool used for identification, assessment, communication and mitigation of a disease in a certain geographical area.

Zero Reporting

Periodic standard reports noting that surveillance in any form for a given disease has been carried out and no disease occurrence has been encountered. Zero reports are a valuable tool to indicate negative results of constant and ongoing passive and/or active surveillance.

2.2 Disease Status Areas

Area of no known disease occurrence

It is an area where the disease has never been reported

Disease free area

A defined geographical area with no clinical signs of LSD disease seen occurring or reported for the past three years without vaccination

Endemic area

An area where LSD is constantly present in susceptible animal population.

Epizootic phase

It is a period when LSD disease is reported and confirmed in a susceptible animal population or region in excess of normal threshold.

2.3 Planning Documents

Standard Operating Procedure (SOP)

A plan of action for a particular undertaking that stipulates exact details of what must be done to accomplish the task.

Preparedness Plans

Preparedness planning involves capacity building, equipment procurement, personnel responsibility allocation, and training in all the disciplines that support effective disease control, e.g. epidemiology, laboratory, disease management, etc.

Rapid Response Plan

This is a pre-programmed plan for immediate response to a report of an outbreak of a TAD or other emergency disease with the goal of eliminating the index case and preventing an epizootic spread. The Rapid Response Plan includes three components: the Epidemiology Section for disease investigation; the Laboratory Section for confirmation sampling; and the Disease Control Section for immediate disease control interventions if/as need be.

Contingency Plan

An operational plan designed for immediate control of a disease outbreak, typically composed by the Department of Veterinary Services for use within that country.

2.4 Personnel

Veterinary Officer

Government employed veterinarians and field staff

Veterinary Personnel

All people associated with veterinary work including public veterinary staff (government at any administrative level) and private veterinarians and their staff members

3.0 Surveillance and Epidemiology

3.1 Case definition for lumpy skin disease

Viral disease affecting cattle and water buffalo caused by the genus Capripoxvirus and characterized by intradermal nodules on the skin and mucous membranes which later ulcerate. Difficult breathing, fever and oedema of the forelimbs may also occur.

A tentative diagnosis of lumpy skin disease can be proffered based on clinical signs but laboratory confirmation is required for differential diagnosis with other diseases in the pox complex with similar signs, such as pseudo lumpy skin disease, which is a milder form of disease caused by a herpes virus. Skin tuberculosis, urticaria, bovine lymphangitis, cowpox, mycotic dermatitis, photosensitization, severe infestations with demodectic mange, and other forms of mange.

3.2 Predisposing Factors

The following are the factors:

3.2.1 Seasonality:

LSD is more common in the rainy season. The disease occurs during rainy season due to involvement of arthropod vectors.

3.2.2 Mobility:

Livestock mobility favours contact between infected and susceptible herds.

3.2.3 Naïve populations:

LSD is mostly reported in naïve populations and is severe in older animals.

3.2.5 Close contact:

Direct transmission enables rapid spread of the virus in large groups of herding animals

3.2.6 Unregulated trade and porous borders:

These factors predispose spread of LSD between neighbouring countries.

3.3 Surveillance of LSD according to disease status

3.3.1 Surveillance in areas of no known disease occurrence

Continuous passive surveillance should be carried out as need be, and appropriate reactions to suspicious cases are implemented.

3.3.2 In disease free areas

Surveillance aims at detecting as early as possible LSD emergence or re-emergence and also demonstrating the absence of the disease or infection. The surveillance to include: Passive surveillance and active surveillance. Active surveillance will include: agent identification, syndromic surveillance, sero-surveillance and abattoir surveillance (Ante mortem inspection). For active surveillance, the approach here is targeted or risk-based surveillance according to the perceived risk factors like neighboring an infected area with or without disease.

3.3.3 Endemic areas

The aim of surveillance is to determine the level of occurrence and distribution of the disease in the area. In addition, to provide data for use in risk analysis and targeted interventions. The activities to be carried out include passive surveillance, and active surveillance. The active surveillance will include pathogen profiling, sero surveillance, syndromic (clinical) surveillance, participatory disease surveillance and outbreak investigation of suspicious cases.

3.4 Administrative Preparations

- a. Veterinary personnel working at all administrative levels must be trained on disease reporting using appropriate , reporting and data management systems and feedback, e.g. ARIS2
- b. The Veterinary Department itself should be equipped, at appropriate administrative levels, with necessary sample collection equipment, disease reporting tools and materials including standardized reporting formats, mobile phones, digital pens, etc.
- c. Undertake necessary capacity building to train and equip personnel at all levels. d. Provide policy or legal framework supportive of surveillance

3.4.1 Passive surveillance and passive surveillance field actions

- a. Veterinary personnel undertaking routine animal health activities e.g. markets stock route inspection, vaccination campaigns, extension services, abattoir activities, etc. are expected to carry out syndromic surveillance during which they will inspect livestock for signs of clinical disease and collect data from livestock keepers;
- b. The national veterinary authorities will engage and sensitize livestock value-chain actors, including producers, traders and transporters, and abattoir workers to report any disease events encountered to the nearest animal health facility either public or private. This will include educational and informative materials on disease recognition and reporting and use of methods such as mobile phones, digital pens, pen and paper, radio programs, television programs, posters, information leaflets, community meetings, etc);

- c. In case of reports of suspected lumpy skin disease from the community, the responsible veterinary personnel, in collaboration with relevant ministries, will conduct outbreak investigation with sample collection and submission to the laboratory. The field staff may involve the Central Epidemiology Unit to delineate the outbreak;
- d. The responsible veterinary personnel will immediately report to the CVO and make a record in the standard reporting format;
- e. The records will also be submitted to the Central Epidemiology Unit by the 15th of the following month in the standard monthly report;
- f. If a disease outbreak is confirmed, veterinary authorities shall institute appropriate control measures ;

3.4.2 Active surveillance

The purpose is to demonstrate the presence or absence of LSD clinical disease and pathogen in both infected and areas without the disease.

Active surveillance may involve one or more of the following activities: sero-surveillance, syndromic (clinical) surveillance; participatory disease surveillance; and outbreak investigation of suspicious cases.

3.4.2.1 Sero-surveillance field actions (when validated commercial kit is available)

- a. Ensure that all necessary technical and logistical equipment is at hand;
- b. Use a pre-designed survey protocol outlining sample size determination, sampling method, target population, sampling units and sampling frame taking into consideration livestock
- c. Use pre-designed data collection tools, including, questionnaires for epidemiological interviews, forms, and data collection software;
- d. Mobilize survey teams composed of properly trained personnel;
- e. Develop a survey program together with the survey teams;
- f. Share the program with relevant stakeholders in targeted areas;
- g. Collect blood samples using appropriate tools and techniques such as vacutainers, filter paper, micro bleeders, syringes, etc.;
- h. Ensure proper environment and time for serum separation, and proper storage of sera;
- i. Ensure accurate labeling of samples, maintenance of test and identification records, the samples cold chain equipment, and proper laboratory submission procedures;
- j. Data will be entered in the Central Epidemiology Unit database for analysis and reporting;
- k. If laboratory testing detects a positive sample, the responsible veterinary personnel should conduct an investigation;

- l. If a disease outbreak is confirmed, veterinary authorities should institute appropriate control measures;
- m. Sero-surveillance for LSD can also be approached by the analysis of cryo-preserved sera for LSD antibodies from previous active surveillance for other diseases in the target populations when commercial kits become available.

3.4.2.2 Syndromic (clinical) Surveillance

- a. Veterinary personnel undertaking routine animal health activities e.g. market stock route inspection, vaccination campaigns, extension services, abattoir activities, etc. are expected to carry out syndromic surveillance during which they will inspect livestock for signs of clinical disease and collect data from livestock keepers;
- b. Any disease syndrome characterized by sudden nodules on skin
- c. If symptoms are encountered, the responsible veterinary personnel should immediately report to the CVO and an investigation carried out. A report should be made in the standard reporting format;
- d. If the symptoms are not encountered the reporting officer should file a zero report, indicating that LSD was not found in the herd;
- e. Provide feedback to the relevant stakeholders.

3.4.2.3 Participatory Disease Surveillance (PDS)

The purpose of PDS is to identify early cases. PDS is a good tool to establish the disease history for “the pox and nodules syndrome” or the disease in an area. PDS is based on communication and transfer of indigenous knowledge for animal diseases, using a variety of procedures. To implement PDS follow the actions below:

- a. Training (capacity building) of veterinary personnel on PDS techniques;
- b. Relevant veterinary authorities identify targeted risk areas and communities concerned;
- c. Prepare relevant checklists;
- d. Draw up a PDS program and share it with the target communities;
- e. Identify key contact people and if possible use translators;
- f. Implement informal interviewing;
- g. Undertake ranking/ scoring, seasonal calendar, time lines, mapping and any other relevant tools in a participatory manner with the local communities;
- h. Undertake visualization of data to achieve a common understanding with the communities;
- i. Undertake data cross-checking by probing, triangulation and laboratory diagnosis for confirmation;
- j. Complement information so far collected with secondary information sources, direct observation and laboratory diagnosis;

- k. Submit a report to the veterinary authority;
- l. Provide feedback to the relevant stakeholders.

3.4.2.4 Outbreak investigation

This will be undertaken immediately after the first index case has been confirmed in a population. In the event that positive LSD test-results are received, the Veterinary Services will do the following:

Mobilize the Rapid Response Teams (RRTs) from their bases to the affected areas;

- a. Carry out outbreak investigation using standardized LSD forms. In addition, carry out sero-surveillance and abattoir surveillance in order to determine the extent of the disease;
- b. Collect data and information on temporal and spatial distribution of LSD outbreak, the species of animals affected and the numbers affected and dead;
- c. Collect samples, transport, store and analyze them in the laboratory;
- d. Enter data into the Central Epidemiology Unit database;
- e. Data will be analyzed and reports generated thereof;
- f. Provide feedback to the relevant stakeholders’
- g. Notify the OIE and other organizations;
- h. Declare the end of LSD outbreak when there is absence of clinical disease evaluated through two participatory disease search within 30 days in an area; quarantine restrictions will be lifted and members of the public advised accordingly.

4.0 Laboratory Detection, Diagnosis and Vaccine

These activities can be carried out at two levels depending on the purpose:

- a. For national disease control programmes, the laboratory manager should use CVO/DVS approved tests based on OIE and the country's laboratory capacity.
- b. For livestock export trade and any other international movement of animals, all laboratory testing must use OIE approved tests, or other tests as agreed to between importers and exporters.

4.1 Minimum Pre-requisite in laboratory detection of lumpy skin disease

- a. All countries in the GHoA should have capacity to carry out basic diagnostic tests that can identify LSD
- b. All Laboratories should have standard operating procedures for biosecurity and biosafety on sample collection, handling, packaging, transportation and storage;
- c. Countries should create a schedule for participation in proficiency testing programmes to improve laboratory standards and harmonization;
- d. The basic assays which should be performed include:
 - For Antigen detection;
 - i. Agar gel immunodiffusion (AGID)
 - ii. Fluorescent Antibody Tests (FAT)
 - For antibody detection;
 - i. Indirect Fluorescent Antibody Tests (IFAT)

4.2 Field diagnosis, sample collection, transportation and storage

4.2.1 Clinical diagnosis

- a. Clinical signs suggestive of LSD are;
- b. Skin lesions including nodules, vesicles or pustules with crusts on the skin of head, eyelids, nostrils, neck, limbs, genitalia, mammary glands and perineum;
- c. Enlarged superficial lymph nodes;
- d. Other signs include, fever, lacrimation, excessive salivation and muco-purulent nasal discharge;
- e. Ruptured nodules leave ulcerations;
- f. Unilateral swelling (cellulitis) of fore limbs.

4.2.2. Post mortem examination

- a. Post mortem examination should look out for the following:
- b. Multiple nodular lesions on the skin that may extend to the respiratory and digestive systems;

- c. Grayish ulcerative necrotic lesions in the upper respiratory and digestive systems;
- d. Pox lesions of mucosal membranes of the upper respiratory tract and lungs;
- e. Enlarged regional lymph nodes draining affected areas with lymphoid proliferation, oedema, congestion and hemorrhages.

4.2.3 Sample Collection

Samples should be collected according to the expected laboratory assay to be performed, but basically the following are required:

- In live animals:
 - » Samples include: Biopsy of skin nodules, whole blood in EDTA, serum, skin scrapings, scabs, nodular fluids and swabs from nasal discharges.
- In dead animals:
 - » Samples include: skin lesion nodules, lung lesions (including normal tissue), lymph nodes e.g. mediastinal lymph nodes and other organs with nodular lesions
- Histopathology
 - » For histopathology preserve the tissues in 10% formalin

4.2.4. Transport and Storage of samples

The tissue samples should be large enough for performance of required tests and the medium should contain 10% glycerol/PBS or saline.

Samples must be chilled and transported to the laboratory as soon as possible

The samples must be kept cool at 4°C if stored for a few days or frozen at or below -20°C for a long period.

Sample storage for long periods in the laboratory should be at -80°C or below.

The containers must be watertight, robust and be closed in a way to avoid any possibility of leakage.

4.3 Sample testing

All laboratory procedures described in this SMP are as prescribed in the OIE Manual of diagnostics. Sample testing will be carried out in laboratories approved by the veterinary authorities. Sample testing will be carried out in laboratories approved by the veterinary authorities.

4.3.1 Antigen detection or virus isolation

4.3.1.1 Identification of the agent.

Suitable diagnostic techniques for use in the GHoA region include:

- Virus isolation in cell culture (primary lamb testis or lamb kidney): the appearance of CPE may take 4–12 days, intracytoplasmic inclusions are clearly seen by haematoxylin and eosin staining, and antigen can be detected by immunoperoxidase
- Fluorescent Antibody Test (FAT) though not available in all countries
- Agar gel Immuno-Diffusion test (AGID) though not very specific due to cross reactions
- PCR if available can be used to differentiate Capripox viruses (LSD, GPV and SPV).
- Histopathology and transmission electron microscopy provides a tentative diagnosis
- Antigen detection ELISA when available can be used

4.3.1.2 Antibody detection tests

These are valid at the herd level only. Suitable diagnostic techniques for use in the GHoA region include:

- Virus Neutralization Test (VNT) is the most specific serological test, but not sufficiently sensitive since immunity to Capripox infection is predominantly cell mediated – individual infected animals may only produce undetectable low levels of neutralizing antibody. It is, however, inappropriate test at herd level.
- Indirect Fluorescent Antibody Test - IFAT
- Agar Immuno-Diffusion test (AGID)
- Western blot – use recombinant Protein 32 as antigen for this test

Samples for virus isolation must be kept chilled and transported under refrigeration or on ice to the laboratory as soon as possible.

4.4 Interpretation of diagnostic test and disposal of positive responding animals:

For national disease control programs, the disposal of positive animals and cohort animals may be as proposed in the disease control section;

For international livestock trade, testing at quarantine stations will be done according to OIE recommendations and/ in concurrence with importing nations regulations;

Disposal of positive animals and cohort animals for international shipment will be in accordance with importing nation's regulations and in concurrence with national program standards;

All diagnostic testing and interpretation will be done in accordance with OIE guidelines. Capacities of national laboratories should be enhanced to carry out PCR and Virus isolation but where this is not possible, then regional support laboratories can be identified to do the same.

Any confirmed positive sample must be immediately reported to the Chief Veterinary Officer.

5.0 Disease Control

Preamble

Prevention and control of LSD is undertaken through vaccination, quarantines, livestock movement controls, vector control, slaughter of infected and exposed animals and cleaning and disinfection of the premises.

5.1 Disease control planning

Advance planning is critical for effective disease control operations. The following are three different planning necessities that must be designed within the framework of the SMP for LSD.

5.1.1 Preparedness planning

Preparedness planning outlines what a government needs to do before an outbreak of a disease in order to be prepared for it. This includes all things that stakeholders must do e.g. capacity building, equipment procurement, personnel responsibility allocation, and training in all the disciplines that support effective disease control, epidemiology, laboratory, disease management, etc.

5.1.2 Contingency (rapid response) plan

Details what a government will do in the event of an incursion of a disease beginning from the point when a suspect case is reported. This is a pre-programmed plan for immediate response to a report of an outbreak of a TAD or other emergency disease with the goal of eliminating the index case and preventing an epidemic spread. It also refers to a response to an increase in prevalence of an endemic disease situation. The Rapid Response Plan includes three components: the Epidemiology Section for disease investigation; the Laboratory Section for confirmation and sampling; and the Disease Control Section for immediate disease control interventions if or as need be.

It is important that the epidemiology and disease control sections of veterinary departments fully cooperate with the disease control programmes in cases of disease outbreak. Pre-planning for index case response is critical so that time is not lost when an index case is reported; the following should be undertaken:

- a. Prepare kits with all equipment needed for effective rapid response to the index case;
- b. Coordinate plans between epi-surveillance, laboratory, and disease control sections;
- c. Ensure all needed equipment is identified and ready for action;
- d. Establish rapid response teams.

5.1.3 Recovery plan

The plan for the safe recovery or restoration of normal activities, although possibly with procedures and practices modified in light of the experience gained during the outbreak

5.2. Lumpy Skin Disease Response

5.2.1 Epidemiological Investigation

Determination of the extent of the disease outbreak and delineation of the outbreak area based on surveillance and diagnostic information as described in surveillance section. (3.4.2.4, Outbreak investigation)

5.2.2 Movement Control and Quarantine

The extensive pastoral production systems in GHoA and the inadequate enforcement of animal movement control in pastoral systems pose a challenge to LSD control. However, the following measures need to be applied in case of LSD outbreaks, when feasible and possible:

5.2.2.1 Movement control

Regulate movement for index flock and contact flocks by monitoring livestock movement control using check posts, stock routes and border posts; control and regulate livestock markets in the infected and surrounding areas; any cattle movement will be as directed by an authorized veterinary officer and a movement permit shall accompany moving animals; develop a harmonised regional policy enabling veterinary authorities to enforce movement control.

5.2.2.2. Quarantine

Identify area to be quarantined; Apply quarantine measures as laboratory confirmation is awaited. Once LSD is confirmed apply full quarantine in the identified area.

5.2.3 Vaccines and Vaccination

5.2.3.1 Vaccines

The current commercial LSD vaccine available in the region contains freeze dried live Neethling strain and the Kenyan Sheep and Goat pox strain.

5.2.3.2 LSD Vaccine Quality Control

Quality assurance should be undertaken by AU-PANVAC

5.3 LSD disease prevention and control approaches depending on disease Status

5.3.1 Area of no known disease occurrence

Efforts in this area will be undertaken to determine the disease status that will hence advice control measures.

5.3.2 Disease free area

Vaccinations for LSD will not be carried out in this area. However, intense surveillance involving clinical examination and certification of cattle in the area will be undertaken. Cattle movement to and from the area will be closely monitored by the authorized veterinary personnel.

5.3.3 Endemic Areas

All cattle over 6 months of age will be vaccinated bi-annually. Use only certified vaccine to control outbreak (AU-PANVAC); Records of all vaccinated livestock will be properly kept; Sero-monitoring shall be conducted on a randomly sampled population to confirm vaccination efficiency and vaccine efficacy. Further vaccination as determined by epidemiology and risk analysis. Mobilization of the community and awareness creation is required. Immediate notification of the diseases to OIE,AU-IBAR and RECs. Resource mobilization (financial and human)/ operationalization of contingency plans; Permanent identification of vaccinated animals using approved official methods;

5.3.4 Epizootic Phase

In case an area is declared infected as a result of confirmed LSD outbreak in any one of the described diseases status areas, the following measures can be put in place: Mass vaccination in the infected area through ring vaccination. Markets closed in response to the outbreak.

5.3.4.1 Movement Control and Quarantine

The objective of movement control and quarantine is to minimize the spread of disease and to mitigate its spread. Both quarantine and movement control as disease control tools should be enhanced.

5.3.4.1.1 Movement control

Regulation of livestock movement is a routine activity and animals are only moved when their health status does not pose a risk to animals in their destination. Regulating movement of animals from an infected area to disease free protects LSD clean animals but does not completely prevent spread of the disease.The pastoral production systems in GHoA and the inadequate enforcement of animal movement control pose a challenge to LSD control.

Effective livestock movement control should among other focus on markets operations, checks posts, stock routes and border post management/controls. Any livestock movement will be as directed by an authorized veterinary officer and a movement permit shall accompany moving animals. Movement control can have adverse effects e.g. increased use of informal routes/trade if not well managed. Therefore communication with stakeholders and use of other strategies to limit spread disease is necessary.

5.3.4.1.2 Quarantine

The application of quarantine is not very useful as it is difficult to enforce in pastoral systems. However, the following is recommended:

- a. Apply provisional quarantine as laboratory confirmation is awaited and lift the provisional quarantine if LSD is not confirmed;
- b. Once LSD is confirmed apply full quarantine in the identified area;
- c. Impose quarantine immediately the index case is identified;
- d. Regulate and control livestock markets;
- e. Stop and enforce livestock movement;
- f. Create awareness and buy-in for the control measures; g. Conduct continuous surveillance to monitor new cases; h. Lift quarantine four weeks after the last case.

5.3.5 Treatment of sick animals

It is recommended to provide supportive therapy to animals with clinical signs and culling for immediate slaughter reduces the impact of the disease.

5.3.6 Vaccination in affected herds

LSD vaccination has little value in affected herds.

6.0 Disease Reporting and Information Management

All surveillance data collected should be sent immediately to the designated epidemiologist for analysis, to enable provision of accurate advice to disease control decision makers.

Upon confirmation of the first case, make an immediate notification to OIE, AU-IBAR and all Departments of Veterinary Services in the GHoA region.

Capacity building on information management is crucial to handle data emanating from surveillance, laboratory diagnosis and response activities. To realize this, countries in the region are advised to:

- a. Adopt common information management system such as ARIS-2;
- b. Strengthen the national disease notification system;
- c. Strengthen information sharing with other stakeholders within countries and in the region.

7.0 Lumpy Skin and Trade

LSD is one of the trade sensitive diseases in the GHoA. Livestock destined for export trade to the Middle East, North Africa and other destinations should pass through export quarantine stations as required by the importing countries, where all LSD and other disease control requirements for importing nations is to be met. Protocols for the quarantine stations are well defined and dealt with in the Standard Methods and Procedures for SMP for Quarantines in the IGAD Region. All testing protocols used should be approved by the OIE.

Trade stock moving within the IGAD Regional Economic Community area or leaving the Eastern Africa region for other international destinations should be subjected to quarantine and testing requirements of the importing nation.

- a. Non-symptomatic export animals from clean areas may enter export quarantine stations. This includes animals kept since birth or for the past 28 days in establishment where no case of lumpy skin was officially reported or where the establishment was not situated in lumpy skin zone.
- b. Animals should come from clean areas with identification and certification;
- c. Animals should be kept in the quarantine station for 28 days prior to shipment; during this period animal samples, preferably paired sera collected 21 days apart, should be tested for presence of causative agent or antibodies or animals monitored for absence of clinical signs or;
- d. Animals should not show clinical signs of lumpy skin disease on the day of shipment;
- e. Animals vaccinated against lumpy skin should be shipped in not less than 15 days and not more than 12 months.
- f. Vaccination within the export quarantine stations shall be done as per OIE standards.
- g. Use risk-based results to promote trade.

8.0 Risk Analysis and Risk Mapping

8.1. Risk analysis

The risk analysis (RA) paradigm includes four components—hazard identification, risk assessment, risk management, and risk communication. Risk assessment is a scientifically based process of evaluating hazards and the likelihood of exposure to those hazards, and then estimating the resulting impact. The risk management phase involves using all of the information gathered during the assessment to evaluate policy options. Risk communication refers to communicating the results of the risk analysis involving all stakeholders.

- a. It is essential for the countries in Greater Horn of Africa to better understand the disease situation in order to implement appropriate disease control strategies that will progressively control LSD. In this regard, risk analysis is required to:
- b. Determine the risk of lumpy skin introduction (release, exposure and consequence) to areas of no known disease and to mitigate the risk due to lumpy skin disease;
- c. To justify trade in livestock and livestock products
- d. Communicate the results of RA to all the relevant stakeholders to assist in the mitigation of lumpy skin disease

8.2. Risk Mapping

Risk mapping is a critical tool that is used to create awareness and guide planning of disease surveillance and control. It is therefore important to understand the various risk factors that are important for the occurrence and distribution of LSD in order to develop risk maps



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