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*Standard Methods and Procedures (SMPs)  
for control of  
**Contagious Caprine Pleuropneumonia  
(CCPP)**  
in the Greater Horn of Africa*





***Standard Methods and Procedures (SMPs)***  
***for Control of***  
***Contagious Caprine Pleuropneumonia***  
***(CCPP)***  
***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 Contagious Caprine Pleuropneumonia (CCPP) and deals with the specific dynamics of CCPP prevention and control in the Greater Horn of Africa (GHoA).

The compilation of the materials in the SMPs for CCPP, 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 and edited 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 CCPP 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 Contagious caprine Pleuropneumonia (CCPP) and specifies standard, methods, and procedures for surveillance, diagnosis and control of the disease. It provides the basis for coordination and harmonization of CCPP regulations and control in the region.

### **1.2. Contagious Caprine Pleuropneumonia**

Contagious Caprine Pleuropneumonia is a severe disease of goats caused by *Mycoplasma capricolum* subspecies *capripneumoniae* (Mccp). Typical cases of CCPP are characterized by extreme fever (41–43°C), and high morbidity and mortality rates in susceptible herds affecting all ages.

Contagious caprine plueropneumonia is transmitted by direct contact through inhalation of infective aerosols. The incubation period can be as short as 6-10 days but may be very prolonged (3-4 weeks) under natural conditions. After approximately 2–3 days of high fever, respiratory signs become apparent. Sheep can be affected occasionally.

CCPP is a serious production disease with effect on livelihoods and has specific requirements for international trade. For the purpose of execution of this SMP, the CCPP disease status in the GHoA will be categorized into three main areas: Area of no known disease status; CCPP disease-free area and CCPP endemic area.

Contingency planning for control of CCPP is based on effective control of any outbreak of CCPP. 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**

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.

#### **Predisposing factors**

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

#### **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.

#### **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 likelihoods of exposure to a 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 Area Disease Status**

### **Area with 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 CCPP disease seen occurring or reported for the past three years without vaccination.

### **Endemic area**

An area where CCPP is constantly present in susceptible animal populations.

### **Epizootic phase**

It is a period when CCPP 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 transboundary animal disease (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 as need be.

## **Contingency Plan**

An operational plan designed for immediate control of a disease outbreak, typically drawn up 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 CCPP:**

CCPP is a severe disease of goats, and other susceptible wild ruminant species, characterized by difficult breathing, coughing and grunting when breathing.

A tentative diagnosis of CCPP can be proffered based on clinical signs but laboratory confirmation is required for differential diagnosis with other diseases in the pneumonic complex with similar signs such as pasteurellosis.

### **3.2 Predisposing Factors**

The following are the predisposing factors:

The occurrence of CCPP is underpinned by risk factors related to environment, production system and immune status of the host population. Livestock mobility and presence of naïve populations in an infected area are major predisposing factors.

CCPP is mostly reported in naïve populations and is severe in younger animals. The presence of chronically infected animals in close proximity with naive animals is also an important predisposing factor, through aerosol transmission. Aerosol transmission enables rapid spread of the mycoplasma in large groups of goats.

Animal movement (due to internal insecurity, goats thefts, informal trade, watering and grazing, and markets and marketing that are not regulated by veterinary personnel), accompanied by porous borders and poor cross-border quarantine systems are also key predisposing factors for CCPP spread.

Other factors are poor nutrition and concurrent parasitic and bacterial infections which aggravates clinical disease.

### **3.3 Surveillance Approaches Depending on Disease Status**

#### **3.3.1 Surveillance in areas of no known disease occurrence**

The aim here is to establish the epidemiological status of the population in the area. Continuous passive surveillance including syndromic/clinical surveillance and active surveillance (sero-surveillance, syndromic surveillance and wildlife) should be carried out as need be, and appropriate actions to suspicious cases implemented.

### **3.3.2 Surveillance in disease free areas**

Surveillance aims at detecting as early as possible CCPP emergence or re-emergence and also demonstrating the absence of the disease or infection. Surveillance includes: passive surveillance and active surveillance. Active surveillance includes : syndromic surveillance, sero-surveillance and abattoir surveillance. For active surveillance, the approach here is targeted or risk based depending on perceived risk factors like neighboring an infected area with or without disease and perceived consequences.

### **3.3.3 Surveillance in endemic areas**

The aim of surveillance is to determine the level of occurrence and distribution of the disease in the area. Surveillance also provides data for use in risk analysis and for targeted interventions.

The activities to be carried out include passive surveillance including syndromic surveillance and active surveillance (sero-surveillance, syndromic surveillance, clinical surveillance, participatory epidemiology, outbreak investigation of suspicious cases and abattoir surveillance,) in both endemic and epizootic situations.

## **3.4 Administrative Preparations**

- a. Veterinary personnel working at all administrative levels must be trained on disease reporting using appropriate reporting systems, e.g. ARIS2 and other national systems;
- b. The veterinary services 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. Capacity building to train and equip staff personnel at all levels should be undertaken as necessary;
- d. A policy/legal frame work that is supportive of surveillance should be provided.

### **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 programmes, television programmes, posters, information

- leaflets, community meetings, etc);
- c. The veterinary authorities may involve wildlife agencies in surveillance and reporting of sickness, mortality, and pneumonia in wildlife;
  - d. In case of reports of suspected CCPP from the community, the responsible veterinary personnel, in collaboration with the relevant ministry, will conduct outbreak investigations with sample collection and submission to the laboratory. In addition to the primary hosts (goats), sheep could be sampled to understand their role during an outbreak. The field staff should involve the Central Epidemiology Unit to delineate the outbreak;
  - e. The responsible veterinary personnel will immediately report to the CVO and make a record in the standard reporting format;
  - f. The records will also be submitted to the Central Epidemiology Unit by the 15th day of the following month in the standard monthly report;
  - g. 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 CCPP antigens and antibodies and clinical disease in both endemic and areas of no known disease status or emergence and re-emergence of disease in free areas. Active surveillance will include sero-surveillance, syndromic surveillance; clinical surveillance; participatory epidemiology; and outbreak investigation of suspicious cases. Each of these approaches can be used alone or in combination as deemed necessary.

#### **3.4.2.1 Sero-surveillance field actions**

- a. Ensure that all necessary technical and logistical equipment is in hand;
- b. Use a pre-design survey protocol outlining sample size determination, sampling method, target population, sampling units and sampling frame taking into consideration livestock and wildlife;
- 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 programme together with the survey teams;
- f. Share the programme with relevant stakeholders in targeted areas;
- g. Collect blood samples from goats and sheep 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, 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 CCPP can also be approached by the analysis of banked sera for CCPP antibodies from previous active surveillance for other diseases in the target populations.

#### **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 nasal discharges in mature animals, onset of pneumonia, high morbidity, high mortalities in young animals, will be investigated in order to confirm or rule out CCPP;
- c. If symptoms are encountered, the responsible veterinary personnel should immediately report to the CVO and an investigation carried out. A report will be made in the standard reporting format.
- d. If the symptoms are not encountered the reporting officer should file a zero report, indicating that CCPP was not found in the flock;
- e. Reports generated thereof should be shared promptly with 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 pneumonia 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 the technique of PDS;
- b. Relevant veterinary authorities identify targeted risk areas and communities concerned;
- c. Prepare relevant checklists;
- d. Draw up a PDS programme and share it with the target communities;
- e. Identify key contact people and if possible translators to be used;
- 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 veterinary authority;
- l. Provide feedback with the relevant stakeholders (general).

#### **3.4.2.4 Abattoir surveillance**

Abattoir surveillance for the detection of CCPP lesions at all slaughtering facilities should be conducted.

The suspected pathological findings should be confirmed by laboratory testing. There is need to establish an animal identification and traceability system. To achieve good results there is need to train abattoir/slaughter personnel and meat inspectors in the recognition of pathological lesions of CCPP. Abattoir records on pathological findings, including lung condemnation will be submitted to the central Epidemiology Unit and entered in the central data base, analyzed and reports generated. In abattoir surveillance related activities, collaboration with the public health service providers will be encouraged where applicable for the differential diagnosis.

#### **3.4.2.5 Wildlife surveillance**

Retrospective surveillance and opportunistic serum collection: wildlife sera in cryobanks may be tested to provide a baseline of the prevalence and geographical distribution of CCPP in susceptible Caprine wildlife. Wildlife can act as useful sentinel since they are not vaccinated and therefore trends and patterns in CCPP serology can provide useful information for disease control.

#### **3.4.2.6 Outbreak investigation**

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

- a. Mobilize the Rapid Response Teams (RRTs) from their bases to the affected areas;
- b. Use standardized CCPP outbreak investigation form. Sero-surveillance and abattoir surveillance to be done in order to determine the extent of the disease.
- c. Collect data and information on temporal and spatial distribution of CCPP outbreak,

- the species of animals affected and the numbers affected and dead;
- d. Samples will be collected, transported, stored and analyzed in the laboratory;
- e. Data will be entered in the central epidemiology unit database;
- f. Data will be analyzed and reports generated thereof;
- g. Provide feedback to the relevant stakeholders;
- h. Notify the OIE and other organizations;
- i. Declare the end of CCPP 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 CCPP Diagnosis and Laboratory Detection**

These activities can be carried out at two levels:

- 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 animals moving internationally, all laboratory testing must use OIE approved tests, or other tests as agreed on between importer and exporter.

### **4.1 Minimum pre-requisite in laboratory detection of CCPP**

- a. All countries in the GHoA should have a capacity to carry out basic diagnostic tests that can identify CCPP;
- b. For disease confirmation, either CFT or cELISA (with supporting epidemiological information) should be used;
- c. Laboratories should have Standard Operating Procedures (SOPs) for biosecurity and biosafety on sample collection, handling, packaging, transportation and storage;
- d. It is necessary to create a schedule for participation in proficiency testing programmes to improve laboratory standards and harmonization;
- e. All countries in the GHoA may carry out sero-monitoring to evaluate progress in sero-conversion using cELISA;

Goats in export trade should be subjected to laboratory testing using OIE approved tests and protocols (Latex Agglutination Test, CFT and cELISA), or as may be required by the importing country.

## **4.2 Field diagnosis, sample collection, transportation and storage**

### **4.2.1 Clinical diagnosis of CCPP**

The CCPP will be suspected when the following clinical signs are observed: pneumonia in goats, sheep, high mortalities in young animals, nasal discharges in mature animals with difficult breathing.

CCPP is strictly a respiratory disease that can manifest in 3 forms:

- a. Peracute form affects many goats at once. Affected goats die within 1 to 3 days with minimal clinical signs;
- b. In acute disease, the initial signs are high fever (41-43°C), followed by anorexia, frequent coughing and labored breathing and diarrhoea. The cough is violent and productive. There may also be frothy mouth and muco-purulent nasal discharges and rapid loss of condition. In the final stage, the goat is unable to move or stand and the neck is stiff and extended. Mortality rate can go up to 90%;

- c. Chronic CCPP (2-3 weeks after onset of signs). Characterized by debilitation, a chronic cough, nasal discharge, mild fever, cough and painful breathing.

#### **4.2.2 Post mortem examination**

The lesions of CCPP are limited to the respiratory system. Acute disease is characterized by unilateral or bilateral pneumonia and sero-fibrinous pleuritis with straw coloured fluids in the thoracic cavity. The cut surface of the lung is granular in appearance with straw-coloured exudates. Yellow nodules may be found in the lungs, surrounded by an area of congestion. There are varying degrees of lung consolidation with enlargement of bronchial lymph nodes. Long term survivors have chronic pleuropneumonia or chronic pleuritis, with encapsulation of acute lesions and fibrous adhesions to the chest wall.

#### **4.2.3 Sample collection and transportation**

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.

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

##### **4.2.3.1 Antigen detection and Mycoplasma isolation**

Suitable samples are:

- a. In live animals

It is recommended to collect blood or pleural fluids obtained by puncture of the thoracic cavity;

The samples must be collected aseptically.

- b. In dead/slaughtered animals

Lung lesions, pleural fluid and lymph nodes of the broncho-pulmonary tract or contents of sequestra (in case of chronic form). The samples from individual animals should be collected from lesions at the interface between diseased and normal tissue. Tissues for culture should be collected preferably in transport (growth) media (modified Newings Tryptose Broth- enriched with sodium pyruvate) and transported under refrigeration or on ice to laboratory; and for histopathology preserved in 10% formalin. If tests cannot be performed immediately, storage should be at -20°C or below including storage in liquid nitrogen (Note: there should be no fluctuations in storage temperatures).

#### **4.2.3.2 For antibody detection**

Live animals: Collect blood for serum preparation

Serological tests – these are valid at the herd level only

- a. Complement fixation test (CFT) - a test suitable for determining freedom from disease and a prescribed test for international trade;
- b. Competitive enzyme-linked immuno-sorbent assay (cELISA);
- c. Compared with the CFT, the cELISA has equal sensitivity and greater specificity.

Other tests:

- a. Rapid field slide agglutination test (SAT) to detect specific agglutinins;
- b. Latex agglutination test has been developed that is easier to interpret than the SAT.

#### **4.2.3.3 Identification of the agent**

- a. For isolation, culture in modified Newings broth or agar media for Mycoplasma;
- b. For antigen/DNA detection use PCR followed by sequencing of 16Sr RNA (PCR is sensitive, highly specific, rapid and relatively easy to perform);
- c. Immunological tests – These include: Indirect fluorescent antibody test: on smears from clinical material using hyperimmune rabbit serum against MmmSC and labelled anti-bovine IgG Fluorescent antibody test: on broth and agar cultures;
- d. Disk growth inhibition test: on a solid medium by a specific hyperimmune serum;
- e. Agar gel immunodiffusion test on pleural fluid, ground lung fragments or even sequestrate;
- f. Western blot where reagents and facilities are available.

### **4.3 Interpretation of diagnostic test and disposal of positive responding animals**

For national disease control programmes, 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 in concurrence with importing nation's 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 programme standards. All diagnostic testing and interpretation will be done in accordance with OIE guidelines.



## **5.0 Disease Control**

### **Preamble**

Prevention and control of CCPP is undertaken through vaccination, quarantine, movement controls, slaughter of infected and exposed animals and cleaning and disinfection of premises.

### **5.1 Disease control planning**

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

#### **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**

The contingency 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. It 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 need be.

It is important that the epidemiology and disease control sections of veterinary departments be prepared for full cooperation 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. CCPP 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. (3.4.2.6, 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 CCPP control. However, the following measures need to be applied in case of CCPP outbreaks, when feasible and possible:

#### **5.2.2.1. Movement control**

Regulate movement for index flock and contact flocks by monitoring livestock movement control (checks posts, stock routes and border posts); control and regulate livestock markets in the infected and surrounding areas; any goats movement will be as directed by an authorized veterinary officer and a movement permit shall accompany moving animals; develop a harmonized 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 CCPP is confirmed apply full quarantine in the identified area.

### **5.2.3 Vaccines and Vaccination**

#### **5.2.3.1 Vaccines**

There is an effective vaccine, inactivated Mccp vaccine (Formerly F38), for the effective control of CCPP. Vaccination should aim at covering 100% of the population to control CCPP. Coordination between neighboring geographical areas and countries in vaccination is very important to control the spread of disease across the region.

#### **5.2.3.2 CCPP Vaccine Quality Control**

It is recommended to use the quality assured/certified vaccine (AU-PANVAC Certificate).

Sero-monitoring that involves sampling before and after field vaccination will be required. Diagnostic laboratories may be used for vaccine performance monitoring.

### **5.3 *CCPP disease prevention and control approaches depending on disease status***

#### **5.3.1 *Area of no known disease status***

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 CCPP will not be carried out in this area. However, intense surveillance involving clinical examination and certification of goats in the area will be undertaken. Goats movement to and from the area will be closely monitored by the authorized veterinary personnel.

#### **5.3.3 *Endemic Areas***

All goats over 6 months of age will be vaccinated bi-annually. Use only certified vaccine to control outbreak (AU-PANVAC). Records of all vaccinated livestock must be properly kept; sero-monitoring shall be conducted on a randomly sampled population to confirm vaccination efficiency and vaccine efficacy. Further vaccination is carried out as determined by epidemiology and risk analysis. Mobilization of the community and awareness creation is required. There should be immediate notification of the diseases to OIE, AU-IBAR and RECs. Resource mobilization (financial and human)/ operationalization of contingency plans are required; and lastly, there is 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 CCPP 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, and 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 area protects CCCP 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 CCPP control.

Effective livestock movement control should among others, focus on market operations, check 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. The steps in quarantine are:

- a. Apply provisional quarantine as laboratory confirmation is awaited and lift the provisional quarantine if CCPP is not confirmed;
- b. Once CCPP is confirmed apply full quarantine in the identified area;
- c. Quarantine is imposed immediately the index case is identified;
- d. Closure of livestock markets;
- e. Stoppage and enforcement of livestock movement;
- f. Create awareness and buy-in for the control measures;
- g. Continuous surveillance is carried out to monitor for new cases;
- h. Quarantine is lifted four weeks after the last case.

#### **5.3.5 Test and slaughter and treatment of sick animals**

Test and slaughter policy can be considered whenever applicable. If some animals test positive the 'test and slaughter' principle may apply, where owners sell the animals for slaughter under supervision. Re-stocking should require all entries to test negative for CCPP.

Some antibiotics such as tetracycline or tylosin can be effective if administered early in infected herds.

## **6.0 Disease Reporting and Information Management**

All surveillance data collected goes immediately to the designated epidemiologist for analysis, who will be responsible for advising disease control.

Upon confirmation of first case, there should be 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 disease response activities. To realize this, countries in the region are advised to:

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



## **7.0 CCPP and Trade**

CCPP is one of the trade sensitive diseases around the world. Export trade stock for the Arabian Peninsula and Middle East, North Africa and other destinations shall pass through export quarantine stations as required by the importing countries. At the export quarantine stations, all CCPP and other disease control requirements for importing nations will 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 are OIE approved or as agreed with the importing country. Trade stock moving within the IGAD Regional Economic Community area or leaving the Eastern Africa region for other international destinations will be subject to quarantine and testing requirements of the importing nation.

- a. The protocols are: Non-symptomatic export animals from clean areas may enter export quarantine stations. This includes animals kept since birth or for the past 21 days in establishments where no case of CCPP was officially reported or where the establishment was not situated in a CCPP-infected zone;
- b. Animals should be kept in a quarantine station for 21 days prior to shipment; during this period animal samples are tested for presence of causative agent or antibodies (paired sera 21 days apart) and observed for absence of clinical signs;
- c. Animals should not show clinical signs of CCPP on the day of shipment;
- d. Animals vaccinated against CCPP should be shipped in not less than 15 days and not more than 6 months;
- e. Vaccination within the export quarantine stations shall be done as per OIE standards;
- f. Risk analysis in respect to CCPP for trade in goats has value in promoting 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.

It is essential for the countries in the Greater Horn of Africa to better understand the disease situation in order to implement appropriate disease control strategies that will progressively control CCPP. In this regard, risk analysis is required to:

- a. Determine the risk of CCPP introduction (release, exposure and consequence) to areas of no known disease and to mitigate the risk due to CCPP;
- b. Justify trade in livestock and livestock products;
- c. Assess the impact of CCPP;
- d. Communicate the results of RA to all the relevant stakeholders to assist in the mitigation of CCPP.

The results of risk analysis will be communicated to the relevant stakeholders.

### **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 very important to understand the various risk factors that are important for the occurrence and distribution of CCPP in order to develop risk maps.



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