CONTINUOUS PROFESSIONAL DEVELOPMENT MODULE

ON

QUALITY AND MANAGEMENT OF VETERINARY SERVICE

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Table of Contents

ACRONMY

ADNIS	Animal Disease Notification and Investigation System
AHI	Animal Health Institute
AUIBAR	African Union Inter-bureau of Animal Resource
CDC	Center for Disease Control
CPD	Continuous Professional Development
DOVAR	Disease Outbreak and Vaccination Activity Reporting
ECF	East Cost Fever
FAO	Food and Agricultural Organization
HACCP	Hazard Analysis Critical Control Point
HPAI	Highly Pathogenic Avian Influenza
JSE	Joint Surveillance Evaluation
NADSS	National Animal Disease Surveillance System
NAHIS	National Animal Health Information System
ODK	Open Data Kit
PDS	Participatory Disease Surveillance
PPR	Pest des Petitis Rumants
RT-PCR	Real Time Polymerase Chain Reaction
RVF	Rift Valley Fever
SET	Surveillance Evaluation Tool
WOAH	World Organization for Animal Health

1. COURSE INTRODUCTION

Course title: CPD Module on Quality and management of veterinary service

Course code: …….

Course points: …….

Target trainees:

The target trainees of this module are veterinarians and Veterinary paraprofessionals working in public and private sectors.

2. COURSE FORMAT

2.1 Description:

This course will cover important topics necessary to build quality of the veterinary service core elements of veterinary service governance like veterinary legislation, organizational structure of the veterinary service, veterinary service performance evaluation and workforce developments and this course also address key technical competency of the veterinary service which includes animal disease surveillance , principles of animal disease prevention and control , role of veterinary public health and animal health emergency managements.

2.3 Objectives

- **General objective :**
  At the end of this module, participants will be able to understand the basic principles and components of the quality of Veterinary Services and the criteria for the evaluation of Veterinary Services.
- **Specific objectives:**
  At the end of this module the trainee will able to
  - Describe and understands the basic components of veterinary service Governance
  - Understand the principles and importance of the veterinary service performance evaluation
  - key components of a country's Veterinary Services, the nature of veterinary services
  - Describe key technical competencies required for quality veterinary service like animal disease surveillance, animal disease prevention and control and animal health emergency management

2.4 Learning outcomes

At the end of the training the participant:

- Will gain knowledge about the key core elements required to ensure quality of the veterinary service
- Will understand the core components of good governance of the veterinary service
- Will understands the importance elements of good animal health surveillance system
  will have the basic understandings about the approach and importance of evaluation of the performance of the veterinary service –PVS pathway

2.5 Duration:

The course will be delivered in five working days with the total of 37.5 hours

Module	Sessions	Time required (hours)		
		Theory	**Practical**	**Total hour**
	Session I: Introduction	**1/2**	**-**	½
	Session II: Veterinary service Governance	**10**	**2**	**12**
	Session III: Technical components of vet. Service	**20**	**5**	**25**
	Total hours	**30.5**	**7**	**37.5 hrs**

2.6 Learning Approach:

Different learning methods such as classroom presentation, plenary session, PowerPoint presentations, group activities /role paly, self-studies, will be used to deliver or study the module.

2.7 Measurement of learning:

The performance or the uptake of the course by the student will assessed by

- Pre test (at the first day of the module short test is given to asses the level of knowledge0
- Post test (at the end the module a short quiz is given to participants)
- Home take assignments (case study issues will be given to groups of participants and they will present their review results to the entire participant)

SECTION 1: GENERAL INTRODUCTIONS

Livestock are main source of livelihood for the poor livestock keeper, globally One billion poor livestock keepers in rural areas worldwide depend at least partially on animals as their means of livelihood. Furthermore, as 60% of human diseases are of animal origin. In recent years, increased human population, Globalization and trade, climate change, urbanization, livestock trade Wars, civil unrest resulting in displacement of humans and animals- facilitate pathogen emergence and spread and as the result the rate of occurrence of emergence and re-emergence of transboundary animal and zoonotic diseases increased. The key element in mitigating the risk of spreading pathogens through international trade is a functional national Veterinary Service (VS). In both the public and private sectors, such VS should have the capacity and capability to prevent, detect and control animal diseases in accordance with the international standards.

They must have the capacity and resources to protect society against threats from natural, accidental and deliberate release of animal pathogens and must be able to conduct operational surveillance, early on-farm detection of and rapid response in addition to establishing the necessary biosafety and biosecurity measures. Through the good governance of Veterinary Services, animal health systems are also contributing to the improvement of other Public Goods such as food security, public health, food safety and the alleviation of poverty. It is the responsibility of all governments to establish quality veterinary Service. Failure to do so could place the country in real danger form the threat of infectious disease.

SECTION 2: VETERINARY SERVICE GOVERNANCE

2.1. Introduction

Good governance is a key to enhancing livestock production and income generation, in addition to improving public health, poverty reduction and animal welfare worldwide. animal health surveillance, early detection of and rapid response to animal disease outbreaks, safeguarding the public from zoonotic disease risk , food safety as well as animal welfare are the core mission of the veterinary service. To effectively discharge all these activities good governance which avail the appropriate regulatory framework and the necessary means to enforce the corresponding legislation, including appropriate human and financial resources and effective private and public partnerships has paramount importance.

2.2. Key elements of veterinary Service Governance

2.2.1: Veterinary Legislation

Learning objective

At the end of this section the trainee will able to understand

- The general principles of the veterinary legislations a
- Key components required for the quality the veterinary legislation

A. Importance of legislation

Legislation is a key element in achieving good governance. *Veterinary legislation* should, provide strong legal support for the veterinary service to effectively carry out their activities to ensure animal health, veterinary. Public health and welfare and meet international obligations and recommendations as defined in the *Terrestrial Code* and the Codex Alimentarius Commission. Veterinary legislations is also key in achieving Sanitary and Phytosanitary requirements to facilitates trades as the change in veterinary legislation can result in change in sanitary measure and affect trade.

B. General principles of veterinary Legislations

The veterinary legislation of the country needs to take into consideration the following General principles

I. **Respect of the hierarchy of Acts**:

Veterinary legislation should respect the separation between the primary legislation, represented by primary acts (laws), and the secondary legislation to ensure that the primary legislation provides the legal basis for the application and enforcement of the secondary legislation

II. Legal basis:

- The veterinary service should have strong legal support from primary and secondary legislation to carry out their activities at the whole territory of the country.
- In a condition when the primary legislation requires the existent of the second legislation for its full extent implementation, the relevant secondary legislation should be developed and enacted as soon as possible.
- Veterinary legislation should be consistent with national and international law, as appropriate, including civil, penal and administrative laws.

III. **Communication:** To ensure transparency and assist the effective implementation of the legislation, veterinary legislation and subsequent documentation needs to communicate to all relevant stakeholders, which can likely be affected the legislation.

IV. **Consistency of the legislation:** Veterinary legislation should be consistent with civil, penal and administrative laws and the associated procedures as appropriate.

2.1.3. Key components of the veterinary Legislation

For the veterinary service to discharge the all the activities under veterinary domain and to ensure good governance the veterinary legislation should include the following key components

1. Necessary powers of the Competent Authority

- Competent Authorities should be legally mandated to ensure that all necessary actions are taken in a timely, coherent and effective manner to address animal health, animal welfare and veterinary public health matters of concern.

  Veterinary legislation should provide for a chain of command that is effective, For this purpose, the responsibilities and powers of Competent Authorities, from the central level to those responsible for the implementation of legislation in the field, should be clearly defined.

2. Delegation of power:

- The veterinary legislation should provide for the possibility of the competent authority delegating specific tasks in the sector of animal health to individual professional veterinarians who are not civil servants
- The specific tasks delegated, the body(ies) to which the tasks are delegated and the conditions of supervision by the competent authority should be defined.

3. The regulation of veterinarians and veterinary paraprofessionals:

Veterinary legislation should provide a basis for the regulation of veterinarians and veterinary paraprofessionals in the interests of the public. To this end, the legislation should

- Should provide legal base for the establishment of veterinary Statutory body
- Describe the prerogatives, the functioning and responsibilities of veterinary Statutory body
- Describe the general structure and system of regulation of *veterinarians* and *veterinary paraprofessionals* by the *veterinary statutory body*
- Give authority to the *veterinary statutory body* to provide principles for or regulate matters pertaining veterinary professions and professionals

4. Laboratories in the veterinary field: The veterinary legislation should define the role, responsibilities, obligations and quality requirements for different level of veterinary laboratories and quality requirements of laboratory diagnostic inputs

5. **T**he veterinary legislation should have specific provision on issue pertaining to animal Identification and traceability, regulation animal feed, animal marketing

6. **Animal diseases:** Veterinary legislation should provide a basis for Competent Authorities to manage disease of importance to the country, present or not, as well as emerging diseases. Which includes surveillance, disease control and prevention, financing of animal disease control measures, emergency response.

7. **Animal welfare:** Veterinary legislation should provide a basis for actions to address the animal welfare related requirements.

8. **Veterinary medicinal products:** Veterinary legislation should provide a basis for assuring the quality, safety and effectiveness of veterinary medicinal products and minimising the risk to human, animal and environmental health associated with their use, including the development of antimicrobial resistance.

9. Safeguards for the food production chain and traceability: The veterinary legislation should provide the necessary legal support to ensure food safety and qualities along the value chain considering the possible risk of contamination.

10. Import and export procedures and veterinary certification

Veterinary legislation should provide the base for efficient regulation of import and export activities and specify the conditions governing the provision of veterinary certification and any prohibitions in conformity with relevant provisions of the OIE and of the Codex Alimentarius Commission.

2.2.2. Ethiopian veterinary Legislations

Strong and comprehensive legislation is fundamental for well-functioning veterinary service in Ethiopia. Currently the key legal texts that support the functioning of the Veterinary Authority in Ethiopia are:

- Proclamation 267/2002 on the Prevention and control of animal diseases,
- Proclamation 81/1976 on abattoirs and meat inspection and its subsidiary Regulations (1972) 4, and
- Proclamation 728/2011 Veterinary Drug and Feed Administration and Control.

In practice the veterinary legislation should give necessary legal support and power for the veterinary authority for effective execution of activities under the veterinary domain. In this regards the current veterinary legislation 267/2002 has weakness and scope limitation as indicated blow.

A. Veterinary laboratory: The Proclamation is silent on the topic of veterinary diagnostic laboratories. According to *Terrestrial Code* Article 3.2.14 sub-point 5, This is an important gap because laboratories are a key part of the veterinary service of the country for the diagnosis, reporting, surveillance and control of notifiable diseases.

B. **Identification and traceability:** Identification and traceability is the critically important to ensure food safety and quality as well as for other services of the veterinary domain like movement control and disease control activities. However there are no provisions for identification of livestock and traceability of animals or products.

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C. Surveillance: The current legislation also lack provisions about the active surveillance and about the collection , sharing and utilization of epidemiological data relevant to reportable disease

D. Veterinary professionals and veterinary para-professionals: The regulation of veterinary professional and para-professionals are important elements of strong governance system of the veterinary service. The current legislation makes provision for the registration of animal health professionals and for the establishment of a Veterinary Council. However, there are many gaps, These include the lack of a definition of veterinary medicine; a list of the prerogatives of the professionals involved in the practice of veterinary medicine; the minimum initial and continuous educational requirements for such professionals; the conditions for the exercise of veterinary activities and veterinary para-professional activities; the responsibilities of veterinarians and persons working under their control; and the

2.2.2. Organizational structure of veterinary service in Ethiopia

Learning objective

- At the end of this module the trainee will able to understand how the veterinary service in Ethiopia is structured and functions.

The veterinary service of Ethiopia is categorized into two, namely

- The Federal Veterinary Service
- The Regional Veterinary Service

The Federal Veterinary service (currently named as "Animal health and Veterinary Public Health Lead Executive") is recently restructured and organized in Ministry of Agriculture under State Minister for Livestock Development Sector.

I. The Federal Veterinary service

Animal health and Veterinary Public Health Lead Executive administers 3 desks or units, namely;

- **Disease Prevention and Control Desk** - mainly focuses on prevention and control of major Trans-Boundary Animal Diseases (TADs) and distribution of vaccines and saline water to regions free of charge.
- **Epidemiology Desk** - is charged with overall guidance of surveillance activities and central animal health data collection, collation, analysis and dissemination of information.
- **Veterinary Public Health Desk** - ensures food safety and control of zoonotic diseases.

The Federal Veterinary service is mandated for

- Preparation of rules and regulations
- Disease prevention and control activities

- Animal health information management
- Laboratory diagnostic services
- Import export testing
- Disease surveillance
- Inspection and certification
- Licensing of export abattoirs

II. The Regional Veterinary Service

Organized in all regional states and city administrations.

The Regional Veterinary Service is mandated for

- Enforce the implementation of national animal health policies
- Regulations and directives
- Involve in the control and prevention of trans-boundary and economically important diseases
- Develop and implement prevention and control strategies of non-trans-boundary livestock diseases
- Veterinary infrastructure development
- Purchase and distribution of animal health inputs
- Clinical service delivery
- Data collection, compilation and submission
- Licensing and regulation of private animal health practitioners

III. Animal Health organizations under federal veterinary service

The Federal Ministry of Agriculture is a policy-making organ, with quality control functions, certification services and capacity development roles. In order to deliver its functions, there are four major animal health institutions that report directly to minister State Minister for Livestock Development Sector. These are;

- Animal Health Institute (AHI)
- Ethiopian Agricultural authority
- Livestock development institute

Brief description on the roles and functions of these institutions is provided below.

A. Animal Health Institute

The former National animal health investigation and diagnostic centre and national Tsetse and Trypanosomiasis Investigation and Control Centre (NTTICC) are currently merged and called animal health institute.

The AHI provides referral diagnostic service, conduct and coordinate animal health surveillance activities, animal health research, technical capacity building, support of regional state veterinary laboratories, and

provides referral diagnostic services. It is designated as a regional support laboratory for the diagnosis of Trans-Boundary Animal Diseases (TADs) in the Eastern Africa Region.

It also coordinates national surveillance programs for TADs such as HPAI, RVF and FMD. The centre is also implementing a 'quality management system' as part of its application for ISO-17025 accreditation. So far, the laboratory has been accredited for 12 tests.

AHHI is also responsible for the surveillance of tsetse-borne and non-tsetse-borne trypanosomiasis and related problems and with devising appropriate tsetse and trypanosomiasis control and eradication methods.

In addition, the institute undertakes studies on the distribution of tsetse and trypanosomiasis in Ethiopia, conducts assessment of the risk of trypanosomiasis in different areas of the country, screens chemo-resistant trypanosome strains and also provides technical backstopping to field veterinary personnel on aspects of trypanosomiasis control.

B. The Ethiopian Agricultural Authority

Following the recent re-structuring of the institution, The Ethiopian Agricultural Authority has been establish as regulatory body and mandated to regulate safety and quality of agricultural product .Hence the former Veterinary Drugs and Animal Feed Administration and Control Authority (VDFACA) and three directorates from the federal veterinary service; quarantine, import and export certification, export abattoir, livestock identification and traceability directorates are currently under the Ethiopian agricultural authority.

These Authority is organized independently to regulate the production and transaction of drugs and feeds, aiming at ensuring quality, safety and efficacy; regulating safety and quality of animal product and import and export certification.

C. National Veterinary Institute (NVI)

The NVI is mainly involved with production of vaccines required for domestic consumption and for export, but also supports diagnostic and surveillance programs for emergency preparedness, disease prevention, control and eradication strategies.

The NVI also hosts the Pan African Vaccine Centre (PANVAC), which was established in 1986 by AU-IBAR. One of the main objectives of PANVAC is to promote veterinary vaccine quality control in Africa and standardization of veterinary vaccines in the region. More than 22 bacterial and viral vaccines are currently being produced by the NVI.

Remark: even though these institute is playing a great role in animal health service of the country , the institute is not currently directly accountable to federal veterinary service.

IV: Internal coordination (chain of command): The capability of the Veterinary Authority

to coordinate their mandated activities with a clear chain of command, from the central level , to the field level of the VS for the activities under the veterinary domains like surveillance, disease control, food safety, emergency preparedness and response are critical for ensuring good governance of the veterinary service. This is one of the critical competency in WOHA PVS evaluation mission. In this regards the linkage between federal and regional veterinary service is weak and does not have clearly legislated chain of command involving singular decision making authority and accountability during a declared animal health emergency.

2.2.3 Evaluation of performance Veterinary service (PVS)

Learning objective: At the end of this section the trainee will able to understand

- The importance of the Evaluation of the performance of veterinary service
- The WOAH pathway for the evaluation performance of the veterinary service (PVS)

I. Introduction

Evaluation of Veterinary Services is an important step in strengthen the veterinary service and its important element in the risk analysis process which countries may legitimately use in their policy formulations directly applying to animal health and sanitary controls of international trade in animals, animal-derived products, animal genetic material and animal feedstuffs. To support the country effort to improve the performance of the veterinary service, WOAH has develop comprehensive ways of evaluation of the performance veterinary service(PVS) pathway.

II. WOAH/OIE PVS pathway

The PVS Pathway empowers national Veterinary Services by providing them with a comprehensive understanding of their strengths and weaknesses using a globally consistent methodology based on international standards – a useful external perspective that can reveal gaps, inefficiencies and opportunities for innovation. This enables countries to take ownership and prioritise improvements to their animal health system. Further more it support compliance with WOAH international standards.

Based on these principles and standards, WOAH has developed the Performance of Veterinary Services (PVS) Pathway, WOAH flagship capacity building platform for the sustainable improvement of national Veterinary Services.

Performance of Veterinary Services (PVS) Pathway, comprising PVS Evaluation ("diagnosis"), PVS Gap Analysis ("prescription") and various options in support of national planning based on the findings ("treatment").

key characteristic of the PVS Pathway:

- A broad-based systems approach
- Avoluntary, country driven process
- Alonger term strategic focus (5-10 years)
- Aparticipatory, supportive and collaborative process, rather than being directive or presenting a risk to countries

III. PVS Pathway Cycle and Toolkit

Cyclical in nature, the PVS Pathway provides a robust mechanism for the continuous improvement of national Veterinary Services, through a staged approach using a set of proven tools and methods to evaluate, plan, cost and support the strengthening of national veterinary services.

The four stages of the PVS Pathway are:

1. Orientation
2. Evaluation
3. Planning
4. Targeted Support

1. **Orientation**; These interactive trainings incorporate theory, practical and planning aspects to prepare countries for future PVS Pathway engagement tailored to their needs. This lead to improved preparation and conduct of PVS Pathway missions, better quality reports, and most significantly, effective use of the reports to source funding and drive change to strengthen Veterinary Services.

2. **Evaluation**: Its external evaluation of the performance of the country's veterinary service compliance with WOHA international standards The initial **PVS Evaluations** comprise a 2-6 week mission which delivers a thorough, qualitative assessment of the performance of a country's Veterinary Services and their compliance with WOAH (founded as OIE) international Standards. It is an external evaluation conducted by a group of WOAH trained and certified experts which collect and analyse baseline information and evidence collated during the mission, including an extensive field component.

The mission uses the proven **PVS Tool**, where 45 Critical Competencies are systematically evaluated via documentation reviews, interviews and physical observations against five qualitative graded levels of advancement, each with detailed descriptions or indicators to transparently guide the process.

The final output is a comprehensive assessment report, providing a complete overview of the Veterinary Services' condition, evaluating its performance and identifying strengths and weaknesses, based on WOAH international Standards.

3. **Planning**: The PVS Gap Analysis (incorporating the PVS Costing Tool) is a carefully structured exercise undertaken with the national Veterinary Services to determine their priority goals, as well as strategies, activities and investments required to achieve these objectives. Its done following the PVS evaluation and using the PVS Evaluation information as a baseline. The PVS Gap Analysis can be used as an advocacy tool when applying for national and/or international financial support.

IV. The PVS Tool

The PVS Pathway activities are based on the basic methodology of the WOAH PVS Tool, as the basis for evaluating performance against the international standards published in the Terrestrial Animal Health Code.

The PVS Tool describes 45 Critical Competencies of Veterinary Services, categorized into four Fundamental Components:

I. Human, Physical and Financial Resources
II. Technical Authority and Capability
III. III. Interaction with Stakeholders
IV. IV. Access to Markets.

2.2.4 OIE - PVS evaluation report of the Veterinary Services of Ethiopia

At the request for the PVS evaluation of Veterinary Services of the Federal Democratic Republic of Ethiopia, a team of experts evaluates VS capabilities within the context of criteria set out in the OIE Terrestrial Animal Health Code (Chapters 3.1 and 3.2), using the OIE PVS tool.

The evaluation was conducted from 3rd May 2011 to 17th May 2011 by a team made up of three independent technical experts approved and selected by the OIE. Asper the evaluation Ethiopia has scored the total average point……2.52. The PVS evaluation has made recommendation at each evaluation components.

Exercises : Review the Ethiopian PVS evaluation report and present the overall evaluation process and key recommendation at each components

2.2.5. PVS Gap Analysis - Ethiopia

PVS Gap Analysis is a quantitative and qualitative evaluation of a country's needs and priorities based on the outcomes of the PVS Evaluation. The PVS Gap Analysis is a key instrument for the development of a national Veterinary Service Strategic Plan, and is to be used for advocating changes and targeting the necessary investments to strengthen the Veterinary Service by addressing gaps.

The PVS Gap Analysis presents the activities and the budget required to implement the VS's strategic plan; it estimates the human, physical and financial resources needed over a 5-year period and also includes an exceptional budget for financing the upgrades identified.

The first step of the PVS Gap Analysis process is to identify the national priorities and levels of advancement needed to achieve these goals over the next 5 years. In Ethiopia, the report of the PVS Gap Analysis mission was conducted in September 2012.

Exercises : Review the PVS Gap analysis report and present key Gap at each section

2.3. Classification of service under the veterinary domain

Learning objectives

At the end of this section the trainee

- Will have a knowledge about key components of a country's Veterinary Services,
- Will understand the nature of veterinary services and classification of responsibilities for providing veterinary services between the public and the private sector.

2.3.1. Introduction

Veterinary domain: all activities that are directly or indirectly related to terrestrial and aquatic animals, their products and by-products, which help to protect, maintain and improve the health and wellbeing of people, including by means of the protection of animal health and animal welfare, and food safety.

Countries have the sovereign right to structure and manage the delivery of animal health, animal welfare and veterinary public health in the veterinary domain in their countries as they consider appropriate. The veterinary domain covers a broad scope of possible activities.

Compliance with standards of quality is critical for Veterinary Services to meet their animal health, animal welfare, and veterinary public health objectives, and is important for the establishment and maintenance of trust in international trade.

The key components of a country's Veterinary Services are presented in

- Governance aspects
- Technical aspects

Four components are focused on governance aspects

- Policy and Management
- Personnel and Resources
- the Veterinary Profession
- Stakeholders

Six components are focused on technical aspects

- Animal Health
- Animal Production Food Safety
- Veterinary Medicinal Products
- Laboratories
- Animal Welfare
- International Trade

2.3.2. The nature of veterinary services

Veterinary services fall into four main categories:

- Clinical services (treatment of diseased animals and control of production limiting disorders)
- Preventive services (avoiding the outbreak of diseases)
- Provision of drugs, vaccines and other products (such as artificial insemination)
- Human health protection (inspection of marketed animal products)

2.3.3. Appropriate forms of decentralization

It is important to examine the particular features of veterinary services that need to be considered in deciding what forms of and approaches to decentralization may be appropriate. The key points that should be considered are presented as follows

- Veterinary services fall into various categories of economic goods
- The economic and institutional framework of the livestock industry

- The subsistence nature of the livestock industry, market failure problems, transhumance production systems and the threat of serious outbreaks of contagious diseases are all problems that need to be confronted in designing decentralization reforms.
- There is scope for the deconcentration and/or delegation of some functions from central government, but the pace of reforms needs to recognize the need to develop the private veterinary service and to phase in cost recovery measures.
- Veterinary para-professionals can play an important role in the privatization process in developing countries.

2.3.4. Classification of service under the public and the private sector

Services under the responsibility of the public sector

- Animal disease surveillance and monitoring
- Prevention and control of diseases of economic and/or public health importance
- Veterinary public health activities such as meat inspection
- Animal movement control
- Laboratory diagnostic service
- Certification of animals and products of animal origin for export
- Regulating the importation of animals and products of animal origin
- Animal health research and extension
- Legislation, policy and strategy
- Licensing of veterinary drugs

Services under public sector responsibility but not necessarily provided by the public administration

- Formulation of national livestock policies (creation of an enabling environment for private sector activities)
- Elaboration of regulations governing animal production, processing and marketing activities and the activities of the private veterinary and para-veterinary professions
- Ensuring the health of the national herds (surveillance, compliance monitoring, quarantine,

quality control of drugs and vaccines, emergency planning, reporting to international agencies and neighbouring countries)

- Inspection and control of livestock products for food safety purposes
- Import and export certification
- Accreditation and monitoring of private suppliers of services animal health services

Services under shared public and private responsibility

- Disease diagnosis and reporting
- Compulsory testing
- Tick and tsetse control
- Food hygiene and inspection
- Continuous education and training
- Notifiable disease control
- Disease emergency response
- Research
- Animal management advice and extension

Services under the responsibility of the private sector

- Clinical diagnosis and treatment
- Production and distribution of drugs and vaccines
- Artificial insemination
- Management of herd health and production programmes
- Marketing of livestock products

2.4. Veterinary profession and workforce development

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2.4.1. Introduction

'Veterinary workforce' is defined by the number, distribution and type of personnel working in the veterinary services across the public and private sectors. For a Veterinary workforce to conduct their activities effectively, they require an enabling environment, which includes adequate and updated legislation, regulation, education and coordination/collaboration mechanisms.

2.4.2 Veterinary statutory Body

Good Veterinary Governance (GVG): entails that Veterinary Services (VS) around the world need to operate on scientifically based principles and be technically independent and immune from political pressures from all sources. Core elements of GVG are linked to the universal acceptance of a veterinary profession.

Veterinary Statutory Body (VSB) means an autonomous authority regulating veterinarians and veterinary paraprofessionals.

The role of a Veterinary Statutory Body (VSB) is to oversee the quality and competence of veterinarians in a country. A competent Veterinary Statutory Body, autonomous from any political or commercial interests, can ensure the excellence of the veterinary profession through appropriately licensing or registering veterinary professionals and veterinary paraprofessionals, and providing minimum standards for (initial and continuing) education and professional conduct for those registered.

Veterinarian means a person registered or licensed by the relevant veterinary statutory body of a country to practice veterinary medicine/science in that country.

Veterinary para-professional (VPP) means a person who, for the purposes of the Terrestrial Code, is authorised by the veterinary statutory body to carry out certain designated tasks (dependent upon the category of veterinary paraprofessional) in a territory, and delegated to them under the responsibility and direction of a veterinarian. The tasks for each category of veterinary paraprofessional should be defined by the veterinary statutory body depending on qualifications and training, and according to need.

The VSB is an autonomous authority, its role and functions are to

- Regulate veterinarians and veterinary paraprofessionals through licensing or registration

- Determine minimum standards of initial and continuing education
- Determine standards of professional conduct / ethical behaviour

The capacity of the VSB relates to the implementation of its functions and objectives in conformity with OIE standards, capacity to

- Exercise and enforce control over all veterinarians and veterinary paraprofessionals
- Provide and administer training programmes and Continuous Education (CE) courses
- Conduct inquiries for professional misconduct and initiate disciplinary measures

VSB has a significant responsibility to provide guidelines and codes for Good Veterinary Practice (GVP) for the use, prescription and dispensing of Veterinary Medicine Products (VMPs) and ensuring compliance with respective legal, statutory, professional, ethical and societal requirements.

Currently Ethiopia has no VSB and hence the veterinary service is facing practical challenges in ensuring good governance and keep the quality of the veterinary service. Currently the veterinary service has the following main problems due to the absence of VSB

- No system for regulating the veterinary professional and upholding professional ethics
- There is no registration and licensing of animal health professionals
- Unable to establish system for continuous professional development for animal health professionals
- Unable to regulate and audit the quality of veterinary education and ensure day one competency of graduate

2.4.3. Continuous Professional Development (CPD):

Defined as an interactive process by which registered veterinary practitioners enhance the skills and knowledge they had at the time of graduation. It covers a continuous post-graduate program of both structured and unstructured learning activities which contribute directly to the professional competency of the registered veterinary practitioner.

CPD is one element in the delivery of a quality system of professional veterinary service.

CPD enables veterinarians and veterinary paraprofessionals to adapt to changes in technology, workplace practices, and delivery of high quality of a veterinary service.

2.4.4. Day 1 Competency and Continuous Professional Development (CPD)

In 2013, the OIE created its Veterinary Education Twinning Programme (the "Twinning Programme") to achieve a more even distribution of veterinary education resources in developing countries, while promoting the One Health philosophy. This program was developed to assist veterinary schools with implementing the OIE Core Veterinary Curriculum and WOAH/OIE Day 1 Competencies.

The goal of WOAH/OIE's Twinning Programme is to increase the number of veterinarians globally who are able to support their country's national veterinary services. Veterinary education is a cornerstone to assure that graduating veterinarian has sound overall competencies to understand and perform entry-level National Veterinary Services tasks to promote animal and public health.

WOAH/OIE Day 1 Competencies and Veterinary Education Core Curriculum provide the catalyst for upgrading veterinary training and address a key capacity building need of the country.

Veterinary education serves as the foundation for the delivery of effective Veterinary Services (both public & private sectors).

Veterinary Continuing Professional Development (CPD) is the process by which veterinarians and paraprofessionals continually maintain, improve and broaden their professional and personal skills and knowledge to ensure they remain professionally competent.

Competencies refer to the knowledge, skills, attitude, and aptitude of a graduating veterinarian for performing tasks for the National Veterinary Services.

- **Knowledge**: cognitive abilities, meaning mental skills
- **Skills:** ability to perform specific tasks
- **Attitude:** affective abilities, meaning feelings and emotions, and
- **Aptitude:** a student's natural ability, talent, or capacity for learning.

Basic competencies: means the minimum knowledge, skills, attitudes and aptitudes required for a veterinarian to be licenced by a Veterinary Statutory Body. This comprises general competencies, as well as specific competencies that directly relate to the WOAH/OIE mandate.

Basic general competencies: means

- Basic veterinary sciences, which are normally taught early in the curriculum and are prerequisite to clinical studies;
- Clinical veterinary sciences, which provide the competencies necessary to diagnose, treat and prevent animal diseases; and

- Animal production, which includes health management and economics of animal production.

Advanced competencies: means the minimum knowledge, skills, attitudes and aptitudes required for a veterinarian to work within the Veterinary Authority.

Day 1 veterinary graduate: means a veterinarian who has just graduated from a Veterinary Education Establishment.

OIE Day 1 Competencies - a series of recommended competencies that graduating veterinarians should achieve as they enter their first day of work.

2.4.5. OIE Day 1 Competencies

11 specific competencies

1. Epidemiology
2. Transboundary animal diseases
3. Zoonoses (including food borne diseases)
4. Emerging and re-emerging diseases
5. Disease prevention and control programs
6. Food hygiene
7. Veterinary products
8. Animal welfare
9. Veterinary legislation and ethics
10. General certification procedures
11. Communication skills

8 Advanced competencies

1. Organization of Veterinary Services
2. Inspection and certification procedures
3. Management of contagious diseases
4. Food hygiene
5. Application of risk analysis
6. Research
7. International trade framework
8. Administration and management

Specific Competencies

Veterinary products Veterinary products: drugs, insecticides/acaricides, vaccines, and biological products used in veterinary medicine.

Learning Objectives of the Day 1 graduate:

- Use veterinary products in appropriate manner with record keeping
- Explain concept of drug withdrawal time to prevent drug residues in food of animal origin
- Understand mechanisms leading to development of antimicrobial resistance (AMR) in pathogens
- Know where to find and how to interpret information regarding the link between antimicrobials use (AMU) in food animals and development of AMR in pathogens of human importance
- Know the appropriate use of drugs and biologicals to ensure the safety of food chain and environment

2.4.6. OIE Model Core Veterinary Curriculum

Serve as a tool for VEE to use when developing curricula to educate vet students to the expected level of competency. Each course is linked (or 'mapped') to one or more of the 'Day 1 Competencies'.

Biochemistry	Parasitology	Clinical and diagnostic sciences
Genetics	Pharmacology/ Toxicology	National & international veterinary legislation
Anatomy	Pathology	Herd health management and nutrition
Physiology	Transmissible diseases	Public health
Immunology	Microbiology	Food safety/hygiene
Biomathematics	Epidemiology	Professional jurisprudence and ethics
Animal welfare & ethology	Rural economics, business management, and animal production	Communication

2.5. Stakeholder engagement and Public Private Partnership (PPP)

Module description

It is intended to provide a structured approach to developing partnership to provide services in the veterinary domain whilst ensuring that the public sector retains control of activities for which it is responsible, nationally or internationally.

2.5.1. Introduction

Public sector: the part of an economy that is controlled by the state.

Private sector: the part of the national economy that is not under direct state control.

Public-private partnership: a joint approach in which the public and private sectors agree responsibilities and share resources and risks to achieve common objectives that deliver benefits in a sustainable manner.

Stakeholder: a person or body with an interest or concern in something.

2.5.2. Why is PPP important in the veterinary domain?

There is great potential for improved animal health and welfare policy development and the implementation of services in the veterinary domain through PPP.

Successful PPP will increase the capability and capacity of Veterinary Services to protect, maintain and improve the health and wellbeing of people, including by means of the protection of animal health and welfare, and food safety.

2.5.3 Benefits of PPP in Veterinary domain

- Disease control
- Food security
- Public health
- Market access
- Livestock productivity
- Better regulation
- Profit/revenues
- Improved quality of services
- Improved livelihoods
- Employment
- Empowerment of women
- Synergies between sectors

- Individual and business confidence
- Improved competencies
- Collaboration
- Optimization/efficiency

2.5.4. Long term impacts/benefits of PPP in veterinary domain or in a country

- Stronger national economy
- Greater trust
- Reduced business risk/increased opportunities
- Improved public health
- Reduced societal inequality

2.5.5. Who are the private sector partners?

There are many potential private sector partners, for example ranging from:

i) Individual veterinary professionals or paraprofessionals delivering a service directly for the Veterinary Authority, through
ii) Producer associations cooperating in design of regulations or support to exports, to
iii) National or international companies bringing resource to deliver outcomes unattainable by the public sector alone.

2.6.6. What is needed for PPP to work well to deliver services in the veterinary domain?

A national policy commitment to enable PPP, including through the appropriate legal framework, is essential, with senior leaders acting as champions to ensure effective and successful delivery.

2.6.7. principles for Public-Private Partnership in the veterinary domain

The following principles should be applied when creating Public-Private Partnerships (PPPs) to provide services to end users in the veterinary domain.

1. Public-Private Partnerships may be initiated by either the public or the private sector.
2. The public partner(s) must ensure that the service(s) to be delivered fall within their statutory or political mandate and meet the intention of that mandate.
3. The public partner must ensure that the PPP is lawful and that any legal obligations or constraints are understood and properly implemented by all parties.
4. All parties must ensure that any Public-Private Partnership is developed with appropriate transparency to all stakeholders and that relevant private actors have equal opportunities for engagement, for example by proposing new initiatives or competing in a tender process initiated by the public sector.

5. All parties must agree on the definition of the service(s) to be delivered, how they are to be delivered, and how that delivery is monitored, assured and evaluated.
6. The service(s) delivered by the PPP may have differing impacts and benefits to the public and private sectors.
7. The benefits and impacts of the service(s) delivered must be defined, understood and respected by both parties.
8. The duration of the partnership must be pre- defined by both partners, with the possibility to extend the period if deemed appropriate following joint evaluation and review.
9. All parties must commit the necessary resources to ensure strong joint governance of the PPP.
10. The private sector partner(s) must have the opportunity to capitalise on the benefits and impacts that accrue through the partnership. This must be transparent to the public partner and must not be to the detriment of the service delivered or realization of the expected benefits/ impacts for the public sector.
11. The terms of the partnership must be set out clearly, either in a formal contract or in an alternative form appropriate to the PPP and agreeable to all parties in the PPP.
12. The PPP must have an agreed stakeholder engagement and communication strategy which includes an appropriate approval process.

2.6.8. PPP in veterinary domain falls into three broad categories

1. Transactional PPP: Government procurement of specific animal health/sanitary services from private veterinary service providers, usually private veterinarians and veterinary paraprofessionals (VPPs), Community-based Animal Health Workers (CAHWs) and/or their associations. It is initiated and funded by the public sector, possibly with further payment from the producer who benefits from the service.

2. Collaborative PPP: Joint commitment between the public sector and end-beneficiaries, often producer associations, sometimes a consortium of producer associations and a range of other interested private organizations such as veterinary associations, to deliver mutually agreed policies/outcomes. Collaborative PPPs may be initiated by either the public or private sectors and jointly resourced, possibly by non-monetary commitments such as personnel.

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3. **Transformative PPP:** Establishment of sustainable capability to deliver otherwise unattainable major programs. Often initiated by the private sector but sanctioned by, and working with, the national Veterinary Services.

SECTION THREE: TECHNICAL COMPONENTS OF THE QUALITY VETERINARY SERVICE

3.1. ANIMAL DISEASE SURVEILLANCE

This section of the module deals about animal disease surveillance including definition, objectives, types and national surveillance system and its role in disease prevention and control. The module was developed considering World organization for Animal Health (WOAH), FAO and national standards.

Learning objectives

After completing this section , trainees will be able to:

- Describe animal disease surveillance
- List the objectives and types of surveillance
- Know the tools and application of participatory disease surveillance
- Understand the national surveillance system and reporting tools
- Recite the national list of notifiable and reportable diseases
- Describe the criteria and process of evaluating a surveillance system

3.1.1. Definition of Surveillance

Surveillance is a systematic ongoing collection, collation, and analysis of data related to animal health and the timely dissemination of information to those who need to know so that action can be taken.

Surveillance vs monitoring

Surveillance and monitoring are often used interchangeably but the later is a routine collection of information on disease, productivity and other characteristics in a population. Surveillance, in contrast, is a more intensive form of data recording that involves dissemination of the information for action.

3.1.2. Objectives of surveillance

The major goal of surveillance is to generate evidence for decision making. Information on disease prevalence, distribution and trend helps to design control program, planning, implementation, and

evaluation of disease control measures. It also helps to facilitate import risk analysis and international reporting. Surveillance is implemented for certain specific objective(s) which could be set based on disease epidemiology, interventions, plan and other factors.

The specific objectives of surveillance include:

- ✓ Detect occurrence of diseases and Monitoring trends of diseases over time
- ✓ Demonstrate disease free status
- ✓ Confirmation for the absence of a specific disease
- ✓ Identification of new and emerging diseases
- ✓ Evaluation of disease control programs
- ✓ Certification of livestock and livestock products

3.1.3 Types of surveillance

Surveillance is broadly classified into Passive and Active based on to data collection means.

I. Passive surveillance

This form of surveillance involves examination of clinically affected cases of specified diseases and reporting through farmers or animal health professionals in the course of their routine activities.

- ⇨ It's a continuous monitoring of the existing disease status using routinely collected data to produce contents that can fed into policy decisions.
- ⇨ Effective passive surveillance requires a well managed and active system.
- ⇨ It's is a key part of the veterinary department's early warning system to detect disease outbreaks and is the basic requirement of the World Animal Health Organization (WOAH/OIE).
- ⇨ Compared to active surveillance, it's cost effective way of data collecting and is not disease specific

Channels for Passive Surveillance data reporting:

- Narrative monthly reports
- Notifiable Disease reporting
- Telephones (Phone call, via Smartphone applications: ODK, Epi-collect, Koobotool, etc)
- Digital Pen Technology

Examples of passive surveillance includes: Reports of laboratory diagnosis, Routine meat inspection findings, statutory notification of disease, etc.

II. Active surveillance

Active surveillance involves the committed effort of veterinary authorities to collect information

commonly by undertaking surveys of specific diseases. It is based on disease search by animal health service providers of stock route/livestock market inspection, farm visits and border point inspection.

Surveys including Disease investigation, sydromic surveillance, risk based surveillance, participatory disease surveillance, sentinel surveillance are categorized under active surveillance.

I. Disease investigations:

Investigations are implemented whenever there are outbreaks to generate information about disease which occurs in livestock populations. Proper outbreak investigation is important steps to control the disease outbreak.

Class Exercise: Make group of five and outline the steps of outbreak investigation based on your field experience

The basic steps of outbreak investigation:

1. Preparing for the field work
2. Confirmation existence of outbreak
3. Verifying the diagnosis
4. Establish working case definition
5. Case finding and data collection
6. Undertake descriptive epidemiology (by Animal-time-place),
7. Undertake studies in relation to environment and value chain actors
8. Epidemiological follow-up and tracing to test the hypothesis
9. Implementation of control and preventive measures
10. Communicate findings and reporting

ii. Surveys

- ✓*Surveys are* conducted using structured design with appropriate sampling to detect and measure the presence or absence of a specific disease (infection).
- ✓It could be mere questionnaire or in some surveys laboratory tests are used to identify the agent.

ii. Syndromic surveillance

- Syndromic surveillance is the collection and reporting of data based on syndrome in order to detect outbreaks associated with the syndrome at an early stage.
- It uses broad case definitions and syndrome manual to gather information.

- It should be used with caution since some diseases can share the same clinical signs. E.g.HPAI and velogenic viscerotropic Newcastle disease.

Case definition and a field manual by Syndrome developed by MoA in collaboration with FAO could provide more description for selected diseases.

Case definition is a set of criteria to categorize whether an animal is diseased or not. Based on the criteria the case could be either suspected, probable and confirmed. History, symptoms, Clinical findings, postmortem lesions, laboratory result, etc are important criteria to characterize a case.

iii. Sentinel surveillance: Surveillance implemented involving few selected farms, abattoirs, veterinary practices or laboratories based on certain criterion.

- Sentinel units refer to either a specific unit of observation or a species of animal are designed to 'keep watch' on a disease.
- Animals are recruited where the risk factors for the disease are highest and the vital parameters are closely monitored and any signs related to the case definition of the disease are reported. This act as an early warning system for e.g. RVF

iv. Serological surveillance: This is the identification of patterns of current and past infections using serological tests.

- ✓ **S**era are drawn from targeted animal population and positivity is used to quantify the level of disease.
- ✓ It includes sero-survey and sero-monitoring. Sero-surveys are used to determine disease status while sero-monitoring is for monitoring effectiveness of vaccination program.
- ✓ This form of surveillance is commonly implemented in our country by Animal Health Institute (AHI) in PPR control program for monitoring of effectiveness of vaccination program and also to determine sero-prevalence status. For instance currently AHI is implementing this monitoring the PPR control and eradication program.

v. Risk based surveillance

Risk based surveillance uses a strategy in which sampling of those population more likely to be infected with the disease of interest are included; to become more efficient to detect the disease. It can be applied at individual animal, herd or regional level and can be based on a single or multiple risk factors. It is an important tool for increasing the efficiency of a surveillance system when aiming to detect or demonstrate freedom from a disease.

In Ethiopia risk based surveillance is mainly implemented on diseases which are not known to present in the country but with high risk of introduction from neighboring countries. RVF and ECF are among diseases with high risk of introduction to our country and hence specific national surveillance plans were developed and implemented accordingly.

3.1.4 . Participatory Disease Surveillance (PDS)

It is the qualitative search of diseases using rapid and participatory rural appraisal approaches. It involves actively engaging communities to identify and prioritize animal health issues. In every PDS activity, probing and triangulation are important to ensure quality of the information collected.

The method needs to be very simple supported with pictures/symbols so that community/informants freely discuss to rank and score the major events in their area. They also draw map of their area with important risk factors.

Currently, PDS is widely applied in the national PPR control program for detection and identification of the disease. Penside test kit is used at field level to confirm the disease. Use PDS manual for PPR for thorough understanding.

PDS consists of three key components:

- ⇨ Semi-structured interview
- ⇨ Ranking and scoring
- ⇨ Visualization/observation

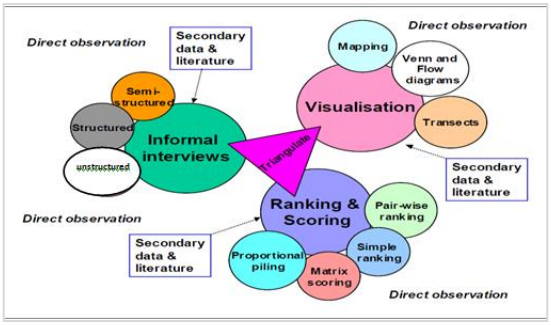


Fig 1: components of PDS (AU-IBAR, 2003)

❖ **Semi-structured interview**

- o It is a systematic way of collecting data from individuals through conversations using predetermined questions listed in a checklist.
- o The initial step is setting the objective and designing checklist for key informant interviews or focused group discussion.
- o During interview; avoid jargon, complex, leading questions, listen and note by body language, give sufficient time for response

❖ **Visualization and observational methods**

•Involves recoding of information through observation and visualization and includes: Timeline,

Seasonal calendar, Mapping, Transect walk, Other methods

Timelines

- ✓ Key informants (Farmers/pastoralists) are asked to list out history of events in their area, trends/cycles in specified time depending on the PDS objective.
- ✓ It is useful for exploring the history the occurrence of key disease events and patterns over time

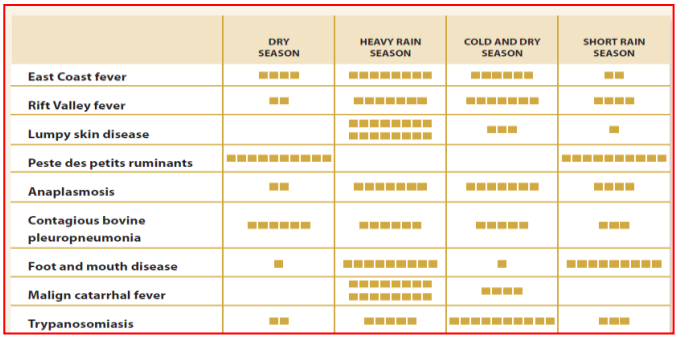
Maps:

- ✓ Drawing map of the area by involving participants of the PDS focusing on key map features: natural resource, land use types, market, grassing area, livestock farm, wildlife, water sources etc.
- ✓ Useful to define the population and system under investigation
- ✓ The scope depends on the study objective and could be farm, village, kebele, district, region, etc

Seasonal calendar

- ✓ Describe seasonal occurrence of an event like climate, farm activities, lambing, livestock movements, livestock offtake, disease, migration, etc.
- ✓ Helps to visualize and analyze local perceptions of the seasonality of key diseases, risk factors (climate, management practices, vectors)
- ✓ Seasonal calendars can help to overcome some of the difficulties of conducting expensive and logistically demanding longitudinal studies.

Eg. of Seasonal calendar



Transect walks

- ✓ Involves a systematic walk through an area, accompanied by key informants with direct observation, informal interview and visualization
- ✓ describes location and distribution of resources, features, landscape and main land uses along a cross-section of a area

❖ **Ranking and scoring tools**

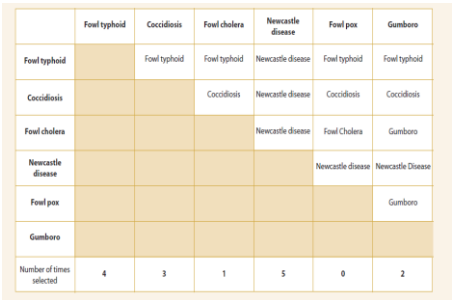
Four type of ranking and scoring tools are applied during PDS depending the objective

1. **Simple ranking:** involves putting a list of items in order based on a defined criterion

Ranking by economic importance	Ranking disease by impact
1. cattle	1. **PPR**
2. goats	2. **CCPP**
3. sheep	3. **LSD**
4. chickens	4. **Rabies**
5. donkeys	5. **NCD**

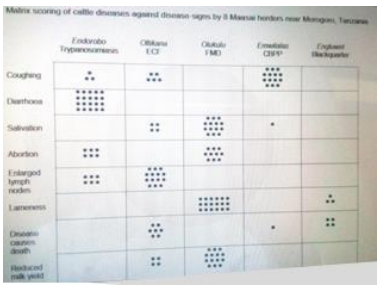
2. **Pair wise ranking:** it is ranking of item by comparing individually with all the other items one-by-one. The scores for each item are counted and ranked accordingly

   ⇨ It can be used to understand the relative importance of different species or diseases. Eg. the table below shows pair wise ranking of poultry diseases where NCD ranks first followed by Fowl typhoid, coccidios, Gumboro, Fowl Cholera and finally fowl pox.



	Fowl typhoid	Coccidiosis	Fowl cholera	Newcastle disease	Fowl pox	Gumboro
Fowl typhoid		Fowl typhoid	Fowl typhoid	Newcastle disease	Fowl typhoid	Fowl typhoid
Coccidiosis			Coccidiosis	Newcastle disease	Coccidiosis	Coccidiosis
Fowl cholera				Newcastle disease	Fowl Cholera	Gumboro
Newcastle disease					Newcastle disease	Newcastle Disease
Fowl pox						Gumboro
Gumboro						
Number of times selected	4	3	1	5	0	2

3. **Matrix scoring:** involves scoring a set of items e.g. diseases against a series of indicators e.g. clinical signs or risk factors
   - Matrix scoring can be a very useful tool to characterise local disease terms and provides information on how livestock keepers differentiate between diseases
   - 30 counters are used to give scores for items along rows in the matrix and the process continues for all items
   - Eg. The figure below shows Matrix scoring for Trps, ECF, FMD, CBPP and Blackquarter in relation to their clinical signs and other indicators



N. B

4. **Proportional piling:** is used to demonstrate impact of diseases: morbidity, mortality and case fatality rates using 100 counters by proportionally distributing in a pile of tree that comprise health, sick, disease types: case and death boxes.
   - ✓ No need to know actual numbers of animals
   - ✓ It should be done with individual informants since it reflects the disease incidence and mortality in their flocks based on their own perceptions

- ✓ It is done by listing common diseases (write names on cards or use pictures): 4 or 5 diseases and lump the rest as others
- ✓ Use 100 counters (Beans, stones) and ask proportion of healthy and sick in the last year. Then among sick animals the counters will be distributed in the box of disease lists and finally among sick list the number of dead animals. Count the counters in each box and calculate morbidity, mortality and case fatality rates.
- ✓ Eg. Proportional piling for sheep and goat diseases

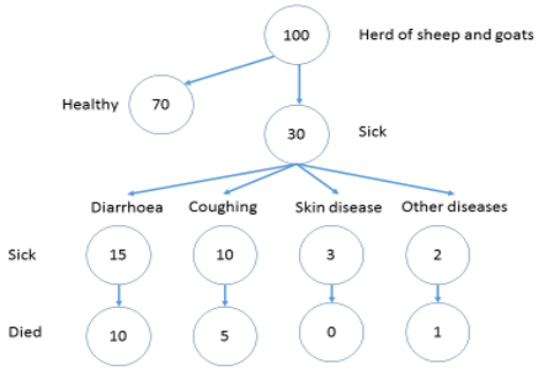


Figure 3. Proportional piling for morbidity & mortality for a sheep and goat herd

Overall flock morbidity is 30%
Overall flock mortality is the sum of all that died = 16%
Overall case fatality is the number dead divided by the number sick, 16/30 = 53%
Disease specific morbidity; diarrhoea 15%, coughing 10%, skin disease 3%, other diseases 2%
Disease specific flock mortality; diarrhoea 10%, coughing 5%, skin disease 0%, other diseases 1%
Disease specific case fatality; diarrhoea 10/15 = 67%, coughing 5/10 = 50%, skin disease 0/3 = 0%, other diseases 1/2 = 50%

3.2. National Animal Disease Surveillance System (NADSS)

National Animal Disease Surveillance System (NADSS) is structured system that comprises internetworked actors for collection, storage, analysis and dissemination of animal disease information for effective prevention and control. The actors of surveillance involves all administrative level structure starting from grass root (Kebele), wereda, zone, region and federal level. According to Animal Disease Prevention and Control proclamation, 267/2002, reporting of notifiable disease as defined by the national veterinary service, is mandatory. NADSS was designed based on WOAH early warning and monitoring systems.

Objective of NADSS

The general purpose of NADSS is to avail accurate, timely and reliable data for decision making and planning. The specific objectives include:

- Detect disease, monitor trends, facilitate the control, provide data for risk analysis and to substantiate the rationale for sanitary measures, support disease freedom status
- It also helps to provide descriptive information on basic epidemiologic parameters of time (temporal pattern), place (Spatial distribution), and animal
- Fulfill international obligations through disseminating disease data to WOAH, AUIBAR, FAO

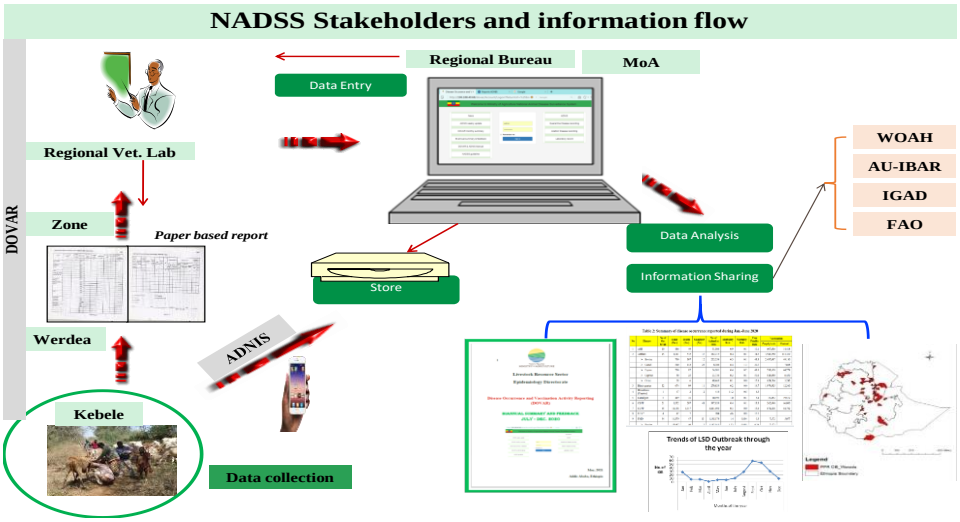


Fig. 2: information flow and feedback in the national surveillance system

3.2.1.. Components of NADSS

The NADSS mainly relies on passive surveillance i.e. reports of disease occurrences. Currently, NADSS comprises two components: ADNIS & DOVAR-II.

I. ADNIS (Animal Disease Notification and Investigation System)

It a real time notification system designed with the objective of early warning to trigger rapid response for identified priority 22 diseases selected based on socio-economic and public health impact. The system has four components:

- ⇨ **N-Collect:** field level data collection and submission. ODK application installed on Smartphone/tablet is used for data collection and submission.
- ⇨ **N-Server:** storage for data sent from field
- ⇨ **N-web:** Viewing reports vie web interface
- ⇨ **N-Alert:** the system automatically generates and disseminates alert for responsible body to trigger rapid response for outbreaks.

End users should change the IP address of the ODK to be able to connect with the national form hub to download the ADNIS data collection form and send reports. Regions also have user account to access system to monitor disease situation in their respective areas.

II. DOVAR-II (Disease Outbreak and Vaccination Activity Reporting)

- ➢ DOVAR-II is an integral part of the NADSS used for monitoring of disease trends in space and time
- ➢ All weredas are expected collect data from their kebeles and send disease outbreak and vaccination activities to the regional veterinary laboratories every month using a standard national reporting format.
- ➢ The regional laboratories and some regional bureaus, where laboratory is not available, collect the monthly DOVAR reports, ensure quality and completeness and finally enter the data into the web based DOVAR-II system using their user account. Once the data is entered into the system, it is accessible by privileged regional and federal users through the web interface using the system IP/URL address.
- ➢ More than 66 disease of national interest with socio-economic and public health impact, including Notifiable list of diseases, are incorporated in the system.
- ➢ The data generated from the system is regularly shared with WOAH, AUIBAR and others to fulfill international obligation. It plays an important role in SPS requirements for international trade.
- ➢ Biannual descriptive analysis with feedback is developed and shared for stakeholders
- ➢ The system has been in use since 1991 and progressed through various developments MS access to web based system. It's also the requirement of WOAH for transparence and information sharing in order to minimize risk of disease transmission and spread in member countries.

3.2.2. National list of notifiable and reportable diseases

The lists of disease incorporated under the national surveillance system are categorized into immediately notifiable and monthly reportable diseases based on the importance to national economy,

food security, public health and international trade.

WOAH and other national criteria are used for inclusion of disease in the national surveillance systems. The following are criteria for listing and categorizing diseases under the national surveillance system:

- ⇨ International spread (TADs)
- ⇨ Zoonotic potential
- ⇨ Significant Spread within Naïve Populations
- ⇨ Emerging Diseases
- ⇨ WOAH disease list
- ⇨ Risk of introduction due to trade, movement along border
- ⇨ Impact on production and productivity

List of notifiable and reportable diseases

The fact that monitoring and responding to numerous diseases prevalent in the country requires huge resource and man power; gears the focus to priority diseases for timely action. As such 22 diseases with trans-boundary nature, zoonotic, high mortality and morbidity, emerging nature are included under immediately notifiable lists. Guinea worm disease was recently introduced since it was reported in animals and other diseases like ECF, RVF, HPAI don't exist in our country but included due to risk of introduction. In addition to the notifiable diseases, other 46 diseases having impact on production and listed under WOAH are incorporate in DOVAR-II. The exhaustive national lists of diseases are shown in annex 1.

Zero reporting

- ➢ In addition to disease outbreak reporting, zero reporting is also important when giving evidence of proof of absence of a particular disease
- ➢ Zero reports are sent through both ADNIS and DOVAR-II to ensure that surveillance is in place that could detect outbreaks if happens
- ➢ Field personnel can carry out inspection of animals at market places, farms, border points etc and document any clinical evidence of disease and send a zero report for that particular disease when they do not come across it.
- ➢ Zero reporting is done for specific notifiable diseases such as RVF, AGW, PPR, etc.

3.3. Assessment and evaluation of surveillance system

Surveillance system depends on long-term cooperation among persons at different levels in the animal health delivery system and coordinating agencies. As a result, surveillance data may be less detailed or precise compared with those from research studies. Hence, effectiveness and performance of surveillance system needs to be regularly evaluated to enhance utility of the system.

- The evaluation should be systematic, transparent and reproducible with a road map to help stakeholders to meet their goals more effectively.
- Several international tools are available including WOAH PVS evaluation, FAO SET and CDC JSE.
- The structure of evaluation consists of statement of objective of the evaluation, Description of the surveillance system, Identification of stakeholders of the evaluation, Methodological approaches, Result of the evaluation communication plan, Conclusion and recommendation.
- The major quality attributes that are important tools in evaluating surveillance system: Sensitivity, specificity, Representativeness, Timeliness, Simplicity, flexibility, usefulness, ownership and sustainability should be assessed against the standards.
- In addition, cost effectiveness and cost benefit should be analyzed.

Ethiopia has undertaken evaluation on overall veterinary service and specifically on surveillance. According to 2011 OIE PVS evaluation findings of Ethiopia, the score for overall Veterinary service was 2.56/5; while it was 2/5 and 3/5 for passive and active surveillance systems respectively. The current gaps and strengths were through the recent external evaluation undertaken using Surveillance Evaluation Tool (FAO SET).

Table 1. Criteria used to Evaluate the Performance of a Surveillance System

Criterion	Function
Usefulness	Describes the contribution of the system to the prevention and control of diseases
Cost	Includes indirect as well as direct costs and should be measured in relation to the benefits obtained, such as improved productivity,
Sensitivity	Refers to the proportion of cases of a disease (or other health-related event) detected by the surveillance system [true positives]
Specificity	Inversely proportional to the number of false positives being reported.
Representativeness	Describes the occurrence of a health-related event over time and its distribution in the population by place and species
Timeliness	Reflects the speed between steps in a surveillance system
Simplicity	Describes the ease of operating the system. Surveillance systems should be as simple as possible while still meeting

Flexibility	Describes the ability of the system to adapt to changing information needs or operating conditions with little need for additional time,
Acceptability	Reflects the willingness of people and organizations to participate in the surveillance system
Quality of data	Refers to the completeness and validity of the data recorded by the
Predictive value	Proportions of reported cases that actually have the health positive related event under surveillance
Stability	Refers to the reliability (the ability to collect, manage and provide data properly, without failure) and availability (the ability to be operational

3.3. Risk Analysis

Learning objectives

At the end of the lesson, trainees should:

- Understand the concept of risk analysis and its components
- Describe the steps of risk analysis
- Know the WOAH framework for import risk analsis

❖ Risk analysis is a systematic method of identifying, analyzing, evaluating, treating, monitoring and communicating risks associated with any disease event, in a way that will enable organizations to minimize losses. It is also important in identification of opportunities for improvement of control strategies to avoid or mitigate against losses.

3.3.1. Purpose of risk analysis

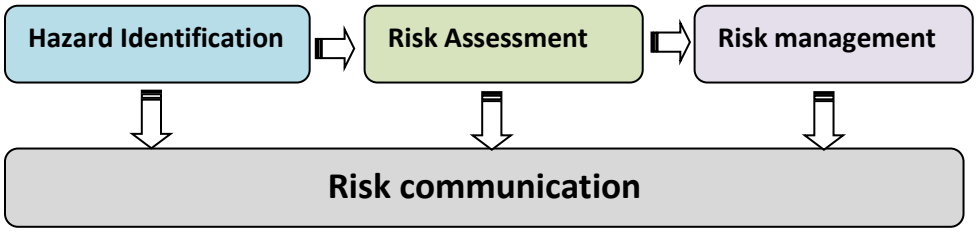
- Assess risks to the national animal health system; import risk analysis or along border
- Assist disease control program in prioritizing animal health management initiatives and in proper application of resources
- Help in planning and management preparedness for emergency animal disease response, and
- Monitor the performance of animal health system at all levels across the country

❖ An important application of risk analysis is in the international trade of animals and animal products (import risk analysis).

3.3.2. Import risk analysis

- ⇨ The WOAH provides import risk analysis framework and procedures with respect to the Agreement on the Application of Sanitary and Phytosanitary Measures (SPS Agreement) of the World Trade Organization (WTO).
- ⇨ The principal aim of import risk analysis is to provide importing countries with an objective and defensible method of assessing the disease risks associated with the importation of animals and animal products, animal genetic material, feedstuffs, biological products and *pathological material*
- ⇨ The analysis should be transparent: comprehensive documentation and communication of all data, information, assumptions, methods, results, discussion and conclusions used in the *risk analysis*.
- ⇨ This is necessary so that the *exporting country* and all interested parties are provided with clear reasons for the imposition of import conditions or refusal to import

❖ **Risk analysis** is the process that includes hazard identification, risk assessment, risk management and risk communication. In all the steps risk is communicated with stakeholders and decision makers.



3.3.3 Steps of Risk analysis

I Hazard Identification

It is a process of identifying the pathogenic agents that could be potentially be introduced in the commodity considered for importation

II. Risk assessment

Risk assessment is the process of evaluating the likelihood and biological and economic consequences of the entry, establishment, and spread of a hazard within the territory of an importing country.

- The risk assessment process involves four interrelated steps:
  - Release assessment
  - Exposure assessment
  - Consequence assessment
  - Risk estimation: using risk matrix
- Risk assessment could be qualitative or quantitative
- Risk athwart or scenario tree is usually used during risk assessment to define and assess the risk in each event along the path way. The overall risk is estimated by computing the risk for each event.

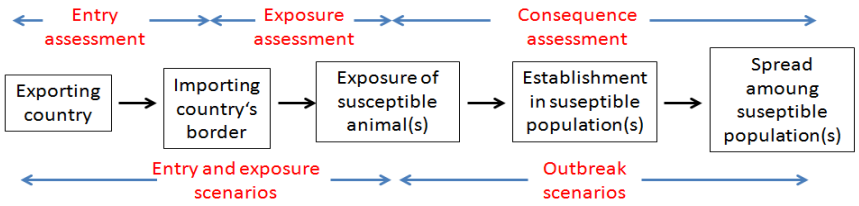


Figure 3: Components of risk assessment (AFFA, 2001)

III. Risk management

It is the process of selecting and implementing measures that can be applied to reduce the level of risk associated with commodity under consideration. Hazards should be managed separately through the following risk management framework:

- ✓ Risk evaluation

- ✓ Option evaluation
- ✓ Implementation
- ✓ Monitoring and review

IV. Risk Communication

Risk communication is a process involving open, interactive, iterative and transparent exchange of information on hazards and their associated risks together with the mitigation measures.

- ➢ It is conducted among risk assessors, risk managers and potentially affected or interested stakeholders in both importing and exporting country.
- ➢ The risk communication process ideally begins at the start of each risk analysis to ensure that stakeholders are provided with an opportunity to become involved from the onset.
- ➢ Risk communication strategy should be developed that ensures stakeholders engagement
- ➢ and effective communication

Summary of Risk analysis steps

1. Determine the scope
2. Clearly state the purpose
3. Develop risk communication strategy
4. Identify source of information
5. Identify hazards likely to be associated with the commodity under consideration
6. Determine whether or not the code recommendations sanitary measures for the hazards
7. Conduct risk assessment for each hazard
8. Determine whether sanitary measures (risk management) are warranted

The WOAH import analysis procedure, framework and also a standard template is used at national level for import risk analysis.

3.2. Principles of animal disease control

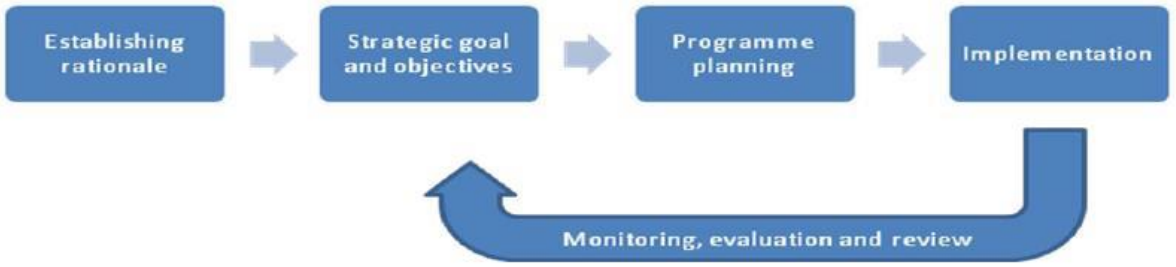
3.2.1. Introduction and objectives

Effective prevention and control of transmissible animal diseases, including zoonoses, is a central mandate of the veterinary Services of each Member Country. Veterinary Services around the world, supported by significant progress in veterinary science, have developed and improved a number of tools to prevent, control and even eradicate transmissible animal diseases.. Disease control programmes are often established with the aim of eventual eradication of agents at a country, zone or compartment level. While this approach

is desirable, the needs of stakeholders may require a broader range of outcomes. For some diseases, eradication may not be practically or economically feasible and options for sustained mitigation of disease impacts may be needed. It is important to clearly describe the programme goals and these may range from simple mitigation of disease impacts to progressive control or eradication of the disease. Always its important taking in to consideration the importance of economic assessment of disease intervention options in the design of programmes taking into consideration effectiveness, feasibility of implementation, as well as costs and benefits.

Establishing the disease control programs has the following steps (fig1)

1. Setting the rationale
2. Defining the strategic objective and goals
3. Program planning
4. Implementation



3.2.2. Rationale for establishing a disease control programme

The rationale for establishing a disease control programme should be clearly stated . while setting the rationale often its important to use multi-sectoral and multi-disciplinary- approach In addition to animal health due attention should be given to public health, food safety,and socioeconomic aspects.

The justification for the disease control programme should summarise current knowledge about the epidemiological situation within the country, providing detailed information on:

- The disease situation
- Disease impacts (animal and public health, food safety, food security, biodiversity and socioeconomic impact) and how these are distributed among stakeholders
- Identity, level of interest and involvement of stakeholders

3.2.3. **Control programme goal and objectives**

The desired goal of a disease control programme should be defined from the outset. Although eradication has traditionally been the goal for many disease control programmes it may not always be achievable. The epidemiology of the disease including its zoonotic potential, along with the availability of technical tools as well as public health, social, environmental and economic considerations should dictate whether eradication is achievable or whether control at a certain prevalence is the desired endpoint. A specific objective of the programme could be for example the establishment of a compartment or a free zone

Factors that needs to be consider while setting the goal of the control program includes

1. **Biological factors;** The biological factors that need to consider while setting out the goal and objectives of disease control program includes**;** Species affected, Zoonotic potential, Distribution and density of susceptible species presence of Wildlife reservoir, Modes of transmission (e.g. vector transmission) Transmissibility Survival ability in the environment, Carrier state
2. **Availability of technical tool**: The goal and objective of the control measures will be affected by the availability of diagnostic tests, Vaccines Treatment, Disinfectants and insecticides, Disposal facilities Trained personnel
3. **Control measures**; the veterinary service should consider status of Movement control, Stamping-out, slaughter or pre-emptive slaughter, Import or export restrictions, feasibility of Zoning or compartmentalisation. Isolation and quarantine, Cleaning and disinfection, Vector and reservoir control and Vaccination and other medical measures
4. **Socioeconomic considerations** ; It's also important to take in to consideration the socioeconomic factors like Cost and benefits of intervention ,Availability of resources, Structure of livestock production systems , Public health implications, Stakeholder engagement, Political will,Incentives and compensation, Acceptance of the public (e.g. animal welfare implications, culling of animals, destruction of food) and Governance and institutional arrangements

3.2.4. Disease Control Programme planning

The *Veterinary Authority* in collaboration with stakeholders should develop a plan based on the goal of the programme. Intervention options should be based on effectiveness, ease and cost of implementation, and expected benefits by reaching the objectives of the programme. Tools such as value chain analysis may be used to help understand the role of different players within the production system, identify critical control points to target measures and provide an indication on the incentives for and feasibility of implementation of the programme.

In case of zoonotic diseases, close collaboration and coordination with public health authorities is necessary during programme planning and implementation

3.2.5. **Implementation plan**

A disease control programme should be based on efficient and effective *Veterinary Services* and the participation of producers and other stakeholders.). A Performance of *Veterinary Services* (PVS) evaluation can also be valuable for identifying and addressing possible gaps within the *Veterinary Services*. In addition, the programme should have political support, and sustainable sources of funding, including government and private stakeholder contributions.

The implementation plan should address the following

A. regulatory framework: The disease control programme should be supported by effective legislation and The regulatory framework for the disease control programme should be adapted to evolving programme needs.

B. management arrangement; While disease control measures to be applied overall responsibility for oversight of the programme remains with the *Veterinary Authority*.

C. Disease surveillance and diagnostic capacity: effective and efficient disease surveillance and diagnostic capacity are the base for early detection and response . the disease control program should always be informed by findings of the disease surveillance.

D. Vaccination and other control measures

- **For the vaccination program to be effective** Vaccination should be applied integrated control strategy utilizing a combination of control measures.
- Depending on the epidemiological situation, the pattern of animal movements, the occurrence of wildlife reservoirs, population density and production systems within the country, targeted vaccination may be more effective than systematic mass vaccination.
- Vaccination campaigns should include serological monitoring of the vaccine for effectiveness. Vaccinated animals should be adequately and permanently marked to allow traceability when relevant in the context of the control programme

E. capacity building: The personnel in charge of implementing the programme should be appropriately trained and familiar with current knowledge of the disease

3.3. Animal health emergency management:

Learning objective: At the end of this module,

- participants will have the basics about the general principles of animal health emergency managements
- Phases of animal health emergency managements and required action under each phases.

3.3.1. Definition

The term ‘animal health emergency’ refers to a condition , triggered by an animal health event creating a major disruption or condition that can often be anticipated or prepared for, but is seldom accurately foreseen. An animal health emergency requires immediate action, demanding decision and extraordinary measures to minimize the adverse consequences of the event.

3.3.2. General Principles of animal Health emergency management

Emergency management refers to the holistic organization and management of responsibilities, resources and actions for addressing all aspects of an emergency. It involves plans and institutional arrangements to engage and guide the efforts of public and private sectors in a systematic, comprehensive and coordinated way. A formally structured animal health emergency management system will set out the elements required to achieve needed level of preparedness for animal health emergencies. It will provide for the planning and implementation of the relevant actions to manage those emergencies.

The country animal health emergency management system should include the following core components:

- Strategic objectives depending on the country’s situation and priorities;
- An adequate legislative framework;
- General definitions of roles and responsibilities.
- Communication and coordination strategies and procedures.
- Access to and mobilization of resource;
- Plans that describe activities and procedures to prepare for, prevent, detect, respond to and recover from animal health emergencies;
- A monitoring and evaluation process

The quality of the veterinary service in delivering the day to day activities are fundamental to ensure good animal health management system. For example the absence of an effective field events surveillance or ante- and post-mortem inspection jeopardizes the detection of animal health events; the absence of good coordination with the public health or environment authorities makes it complicated to manage a zoonotic or wildlife disease.

The animal health emergency management system of a country should be developed according to the existing capacities of Veterinary Services. Availability of resources (human, physical, technological and financial), current capabilities, types of organization and existing partnerships should be considered. Thus,

before building an emergency management system for animal health emergencies, Competent Authorities should review their level of advancement regarding relevant OIE PVS

CCs to ensure the adequacy of the country's system.

Some of the critical component that influence the ability of the country to manage animal health emergency includes

- The competency of the animal health workforce
- The existence of legislative framework, especially to allow rapid response;
- The strength of the risk analysis system
- The strength of border control and export certification
- Strong chain of command for good and timely reporting and control measures
- The presence of good surveillance system and laboratory facilities
- Communication and coordination system

Therefore animal health emergency management is part of the quality of Veterinary Services, as described in Section 3 of the *Terrestrial Code* (OIE, 2019b) and influenced by the performance of the veterinary service.

The existence of effect Animal health management would contribute to the acquations of three core competecnies with in the framework of WOHA PVS assessment methodology, namely

The GEMP Guide and the PPEP Process should contribute to the acquisition of three core competencies within the framework of the OIE PVS assessment methodology, namely:

- CC-I.9 Emergency financing
- CC-II.5 Emergency preparedness and response
- CC-II.6 Prevention, control and eradication of diseases.

Discussion and Self-Assessment question

1. Share a personal experience of planning and management of animal health emergency:
   - What was the animal health event?
   - What was your role?

2. what are the fundamental components of Animal health emergency management?

3.3.3. Animal health emergency phases and emergency management actions

A. Phases of animal Health emergency

Good animal health emergency management has four phase called (fig.1)

- peace time,
- Alert

- emergency and
- reconstruction phase

A. Peace time phase: The term ‘peacetime phase’ refers to the period of time prior to a specific animal health event when no extraordinary or emergency actions are necessary in relation to that event. It means, for example, that there may be peacetime on the front of one disease, while being emergency on the front of one or more other diseases.

Alert phase: ‘alert phase’ refers to the period of time when the level of risk due to an animal health event requires close observation of all activities, rapid transmission, sharing and assessment of relevant information, and quick precautionary action to address an impending emergency. The alert phase is the period when a threat is advancing or has been identified.

Example: A suspicion case of priority disease or by confirmed outbreaks in the vicinity of a country or in trading partner countries. During that alert phase, an early warning system (EWS) is used.

Emergency phase: The term ‘emergency phase’ refers to the period of time calling for immediate action to avoid or mitigate direct and indirect losses caused by an animal health event. Although this is the only phase designated ‘emergency,’ the entire event is addressed by emergency management.

R**econstruction phase**: Refers to the period of time following the emergency phase and dedicated to the re-establishment of animal populations, the recovery of pre-emergency (human and animal) health levels (including efforts to reduce risk factors), the relaunching of animal production systems, value chains and trade, the restoration of livelihoods and the support to other socio-economic aspects impacted by the animal health event.

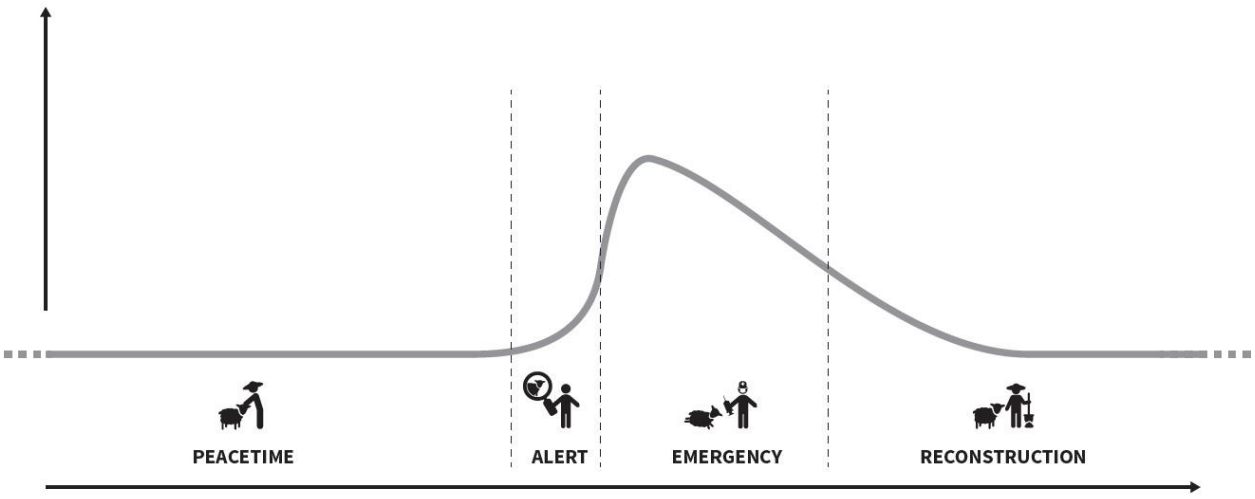


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Fig.1 Phases of animal health emergency

3.3.4.Actions of Animal health emergency

There are five types of animal health emergency management actions implemented through all animal health events. These actions are implemented in accordance with their relevance for each phase of the animal health event causing an emergency.

Five actions
A. Prepare
B. Prevent
C. Detect
D. Respond and
E. Recover

The action 'prepare: Refers to the development and implementation of strategies, policies, programmes, systems and analyses prior to an animal health emergency, in order to prevent, detect, respond to, and recover from, that emergency.

- Prepare is the predominant action of emergency management during peacetime, but it is also important during reconstruction.

The action 'prevent: Refers to the implementation of activities, programmes and systems that enable an organization to avoid, preclude or limit (mitigate) the impact of an animal health event.

- Prevent is an action of emergency management that is key during **the alert phase** to avoid the event becoming an emergency, but it also applies as a general measure during the other phases.

The action 'detect: Refers to the implementation of activities, programmes, and systems to either identify an incursion, emergence or re-emergence, or spread of a hazard, or define the level of presence or demonstrate the absence of the hazard.

- Detect is particularly important during the alert and emergency phases to know where to respond. It is also important in peacetime in terms of readiness, and in the reconstruction phase to help recover a favourable animal health status.

The action 'respond' refers to the implementation of activities, programmes, and systems aimed at the rapid containment and eventual elimination of the cause of an animal health event, and at the mitigation of its negative consequences.

- Respond is the action of the emergency phase. However, it is also possible to respond pre-emptively during the alert phase.

The action 'recover' refers to the action of implementing activities, programmes, and systems to relaunch animal production systems, value chains and trade, to restore livelihoods, and to support other impacted socio-economic aspects.

- Recover is predominant during the reconstruction phase but can be activated before the end of the emergency phase, especially if that phase is long-lasting or concerns large parts of the territory.

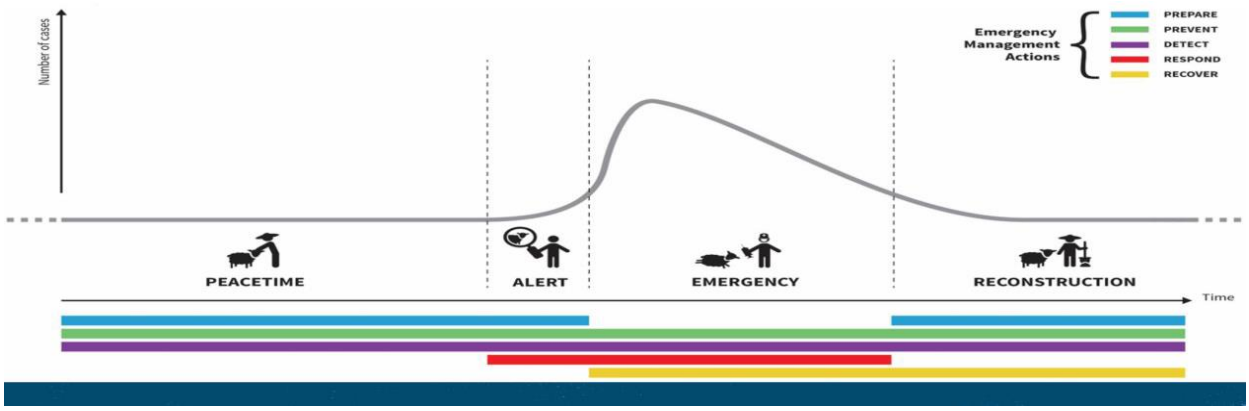

Figure 2 shows the emergency management actions that should be implemented at each phase

Action	Emergency phase			
	Peace time	**Alert phase**	**Emergency**	**Reconstruction**
Prepare	++++	++		+
Prevent	++	++++	++	++
Detect	++	++++	+++	++
Respond		+	++	
Recover			+	++++

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5: ANNEX 1: List of national notifiable and reportable disease in Ethiopia

Nº	List of Diseases	Species affected	Reporting period	Remark
1	African Horse Sickness	Equine	Immediate	
2	African Swine Fever	Swine	Monthly	
3	Anaplasmosis	Bovine	Monthly	
4	Anthrax	Multispecies	Immediate	
5	Avian Chlamidiosis	Avian	Monthly	
6	Avian Influenza	Avian	Monthly	
7	Avian Mycoplasmosis	Avian	Monthly	
8	Babesiosis	Bovine	Monthly	
9	Black quarter	Bovine	Immediate	
10	Bluetongue	Multispecies	Immediate	Risk of introduction
11	Botulism	Multispecies	Monthly	
12	Bovine Genital Campylobacteriosis	Bovine	Monthly	
13	Bovine Spongiform Encephalopathy	Bovine	Monthly	
14	Bovine Tuberculosis	Bovine	Monthly	
15	Bovine viral diarrhea	Bovine	Monthly	
16	Brucellosis	Multispecies	Monthly	
17	Camel Pox	camel	Monthly	
18	Classical Swine Fever	Swine	Monthly	

Nº	List of Diseases	Species affected	Reporting period	Remark
19	Coccidiosis	Multispecies	Monthly	
20	Contagious Bovine Pleuro-pneumonia	Bovine	Immediate	
21	Contagious Caprine Pleuro-pneumonia	Caprine	Immediate	
22	Contagious Echtyma/Orf/	Multispecies	Monthly	
23	Dourine	Equine	Monthly	
24	Echinococcosis/Hydatidosis	Multispecies	Monthly	
25	Enterotoxemia	Multispecies	Monthly	
26	Enzootic Abortion of Ewes (Chlamydiosis)	Ovine	Monthly	
27	Epizootic Lyphangitis	Equine	Monthly	
28	Equine Herpes Virus	Equine	Monthly	
29	Foot and mouth disease	Multispecies	Immediate	
30	Fowl Cholera	Avian	Monthly	
31	Fowl Typhoid	Avian	Monthly	
32	Fowl pox	Avian	Monthly	
33	Guinea Worm disease	Dog, wild life	Immediate	Emerging disease in animals
34	Glanders	Equine	Monthly	

№	List of Diseases	Species affected	Reporting period	Remark
35	Heamorrhagic Septicaemia	Bovine	Immediate	
36	Pathogenic Avian Influenza	Avian	Immediate	Risk of introduction
37	Heartwater/Erlichchiosis	Multispecies	Monthly	
38	Infectious bovine rhinotracheitis	Bovine	Immediate	
39	Infectious Brocnitis	Avian	Monthly	
40	Infectious Bursal Disease (Gumboro)	Avian	Immediate	
41	Infectious Laryngotracheitis	Avian	Monthly	
42	Leptospirosis	Multispecies	Monthly	
43	Lumpy Skin Disease	Bovine	Immediate	
44	Maedi Visna	Caprine, Ovine	Monthly	
45	Malignant Cataral Fever	Bovine	Monthly	
46	Marek's Disease	Avian	Monthly	
47	Nairobi Sheep Disease	Ovine	Monthly	
48	Newcastle Disease	Avian	Immediate	
49	Ovine Epididymitis	Ovine	Monthly	
50	Peste des Petits Ruminants	Caprine, Ovine,	Immediate	

№	List of Diseases	Species affected	Reporting period	Remark
		Camel		
51	Pullorum Disease	Avian	Monthly	
52	Rabies	Multispecies	Immediate	
53	Rift Valley Fever	Multispecies	Immediate	
54	Rinderpest	Mainly Bovine	Immediate	Risk of re-emergence
55	Salmonellosis	Multispecies	Monthly	
56	Scrapie	Caprine, Ovine	Monthly	
57	Sheep and Goat Pox	Caprine, Ovine	Immediate	
58	Small hive beetle infestation	Bee	Monthly	
59	Streptothricosis	Multispecies	Monthly	
60	Surra	Equine	Monthly	
61	Swine Vesicular Disease	Swine	Monthly	
62	Theleriosis/East Coast Fever/	Bovine	Monthly	
63	Trichomonosis	Bovine	Monthly	
64	Typanosomosis	Bovine	Monthly	
65	Unknown Camel Disease	camel	Immediate	
66	Varroosis of Honey bee	Bee	Monthly	

№	List of Diseases	Species affected	Reporting period	Remark
67	Vesicular stomatitis	Multispecies	Monthly	
68	Chalkbrood	Bee	Monthly	

Annex 2: WOHA PVS critical competency