**Australia Indonesia Partnership for Emerging Infectious Diseases**

**(AIP-EID)**

**Animal Health Program**

**Technical Guidance (BIMTEK)**

Animal Disease Investigation

< Tim Teknis Pertemuan Modul - AIPEID>

March 20 2015

V4.1

Table of Contents

[Introduction 3](#_Toc414793286)

[Background 3](#_Toc414793287)

[Course Objective 3](#_Toc414793288)

[Disease investigation: responsibilities of the investigator 4](#_Toc414793289)

[Basic Principles of Diseases 6](#_Toc414793290)

[Background 6](#_Toc414793291)

[Pre-investigation 7](#_Toc414793292)

[Coordination, confirmation and preparation before going to the field 7](#_Toc414793293)

[Biosecurity and biosafety (self-protection) 9](#_Toc414793294)

[On site: Disease Investigation 13](#_Toc414793295)

[Effective communication 13](#_Toc414793296)

[Taking a case history 16](#_Toc414793297)

[Physical examination 19](#_Toc414793298)

[Environmental examination 24](#_Toc414793299)

[Selecting, taking and submitting relevant samples 25](#_Toc414793300)

[Before you leave 28](#_Toc414793301)

[Follow-up actions 29](#_Toc414793302)

[Examples of information analysis 31](#_Toc414793303)

# Introduction

## Background

Veterinary services Indonesia are a part of the national animal health system implemented by Animal Health Centres (puskeswan) at the subdistrict level. The puskeswan has an organizational structure well suited to its front line position in Animal Health., with one veterinarian and several para-veterinarians or field animal health officers. They are expected to be able to undertake activities effectively and to manage resources efficiently.

Disease investigation is one of puskeswan responsibilities and its managers must understand and have good disease investigation skills. Puskeswan staff should have good field disease investigation skills and be able to provide helpful information on diagnosis and treatment to livestock owners. This BIMTEK provides basic technical reference for staff conducting disease investigation. It covers technical principles and helps investigators address field conditions in their areas. Additional materials related to animal health service or animal disease management that match local needs can be added.

## Course Objective

Technical guidance (Bimtek) on Animal Disease Investigation aims to:

* ***Improve understanding and skills in information collection, physical and environmental examinations, relevant and proper sampling while conducting animal disease investigation in the field.***
* ***Support and encourage SMS reporting system under iSIKHNAS by providing adequate and quick responses.***

### About the handbook

This handbook provides technical advice for disease investigation. It is not the standard reference and course facilitators should use additional technical references to match local conditions and good veterinary practice and science development in general.

Before delivery of this course material, Dinas should ensure that it is in accordance with participants’ needs.

### Course Overview

The technical guidance (BIMTEK) course is developed as part of Australia – Indonesia Partnership Program for Emerging Infectious Diseases – Animal Health Program. One of the AIP-EID goals is to improvethe capacity of animal health field officers in investigating animal diseases. This course will develop skills in field disease investigation, but it could additionally include some materials on management of certain diseases depending on priority set by the province/district/city where the course conducted.

### Competence Statement

A competency statement is a description of what an individual is expected to be able to do to be successful in their work. The following competency statement describes expectations of investigators.

After participating in this course, participants are expected to:

* ***understand the value of animal health services to the community***
* ***understand disease and epidemiological principles in information collection***
* ***understand biosafety andbiosecurity***
* ***Be skilful in investigating animal diseases in the fields, particularly:***
  + ***effective and good communication***
  + ***proper and relevant information collection***
  + ***systematic and comprehensive physical examination***
  + ***environmental examination***
  + ***principles and practice of sample submission***
* ***be able to synthesise the information collected (clinical history, physical examination, environmental examination etc.) and provide useful information to the farmer and to their supervising veterinarian***
* ***understand the ways in which they can provide the greatest value of service to farmers, within the scope of their authority and capacity.***

# Disease investigation: responsibilities of the investigator

### Content

Animal health field officers:

* Provide veterinary services to animals in need and for their owners
* Provide management and animal health advice
* Provide referral assistance when unable to provide/handle the services
* Report disease events
* Assist vets in providing animal health services and reporting

Factors that may affect good veterinary service:

* Promptness of officers in responding client or farmer problems
* Capabilities (knowledge, experience and skills) of field officers providing services of disease prevention and treatment,
* Clients or farmers pay service fees. Field officers may set prices for their services due to the limited number of drugs and equipment at dinas. The prices may discourage farmers from seeking services.
* “Client” or farmer understanding toward services that they may receive.
* Cost of disease control programs – culling animals, restricting movement

Investigator Responsibilities:

Responding to and investigating reports from village reporters or farming communities received for animal health services

* Coordinating with veterinarians and other personnel involved in the investigation
* Building communication with livestock owners
* Collecting important information from farmers or other sources
* Examining animals physically
* Examining environment
* Taking and handling samples
* Providing advice to the owner and/or treatment to the animal
* Managing and reporting information as results of investigation

Reporting investigation results/findings to the information system.

Disease investigation will normally be in response to reports of disease. Reporting procedures are described in the Pelsa module – see Pelsa and iSIKHNAS modules. Investigators are able to amend/add to information for disease cases based on the results of their investigation.

Awareness of Indonesian legislation covering veterinary activities in disease investigation

REGULATION OF MINISTER OF AGRICULTURE NUMBER: 83 / Permentan / OT.140 / 12 / 2012 ON FORMATION GUIDELINE OF MEDIC AND PARAMEDIC VETERINARIAN FUNCTIONAL POSITIONS

1. Paramedic veterinarians are civil servants who are assigned, given responsibilities, authorisations and full rights by **authorised officer** to **assist** veterinarians in controlling and mitigating animal diseases and pests as well as securing animal products and improving animal health.
2. Medic veterinarians undertake the following duties, assisted by paramedics:
   1. Conducting veterinary investigation and testing services;
   2. Controlling quality and certifying animal medicine;
   3. Testing and producing vaccines and biological materials;
   4. Testing livestock product condition and safety;
   5. Testing feed safety;
   6. Testing semen and embryo conditions;
   7. Conducting livestock breed health services;
   8. Observing and identifying animal health;
   9. Securing animal diseases;
   10. Preventing animal diseases;
   11. Eradicating animal diseases;
   12. Supervising animal medicines;
   13. Controlling and mitigating zoonotic diseases in animals;
   14. Assuring animal product security and condition; and
   15. Applying animal welfare principles.

# Basic Principles of Diseases

## Background

Field officers providing veterinary services in disease investigation may think biological agents, such as bacteria, viruses or parasites alone are responsible for disease. However, there are non-infectious causes, such as toxins, trauma, nutritional and management stress. In addition, the same agent may not always result in the same clinical signs in different animals or different environments. Field officers should consider the relationships between the agent, the host and the environment. The concept of the ‘epidemiological triangle’ helps to illustrate this idea. This triangle relates the agent, the host and the environment.

### Learning objectives

* Participants can explain important aspects of disease occurences with reference to the disease triangle.
* Participants can explain disease agents or causes in the disease basic principles.
* Participants can explain disease transmission concept.

### Content

**Disease**

A disease is a condition that affects normal body function. Disease may be infectious e.g. brucellosis, rabies, or disease may be non-infectious e.g. trauma or cancer or poisoning. Clinical signs may or may not be obvious, and they may range from minor conditions to death.

Based on their ability to move to other individuals, infectious diseases may also be classified as contagious. Contagious diseases are diseases that can be transmitted directly, from one individual to another – for example foot and mouth disease, influenza. Some infectious diseases are indirectly transmitted e.g. Japanese encephalitis (mosquito), babesiosis (tick), anthrax (contaminated soil). Some diseases, e.g. anthrax, influenza, and foot and mouth may be transferred both directly or indirectly.

The concept of the disease triangle describes relationships among host, agent and environment in disease occurrence. The interaction of the components of the triangle can affect the course of disease. Some components of the triangle –usually agent, but sometimes environment or host – may be considered ‘necessary’ and other components may need to be combined for disease to occur.

**The epidemiological triangle**

**AGENT**

**HOST**

**ENVIRONMENT**

The **host** is a susceptible animal. Host components include: species, breed, sex, age, physical condition, immune status including vaccination status or other host specific factors.

The **agent** is a component of disease and can be divided into biological and non-biological agents. Biological agents include viruses, bacteria, fungi, endoparasites and ectoparasites. Non-biological agents include chemicals and toxins.

The **environment** may affect the host and/or agent in ways that influence the occurrence of disease. This includes altitude, geography, climate, season, humidity, dust, sunlight, pens, and also includes things like management, husbandry systems, and population density. This subject is addressed more completely in the Field Epidemiology course.

How do biological agents/different pathogenic types spread? Some examples are:

* inhalation of droplet or aerosol (influenza, tuberculosis, FMD, anthrax)
* ingestion of contaminated feed or water, dirty hands, oral contact (brucellosis, nematode parasites, mad cow disease, anthrax)
* mechanical by entry of agent through the broken skin/wound or via mucosa (leptospirosis, rabies, anthrax)
* vector by biting insect or tick (tick fever, Japanese encephalitis, bluetongue, ephemeral fever)
* iatrogenic – related to treatment, eg poor aseptic technique (human immunodeficiency virus, methicillin resistant *Staphylococcus aureus* ). Some diseases can be transmitted during artificial insemination.
* sexual - venereal aka sexually transmitted (human immunodeficiency virus, infectious pustular vulvovaginitis, classical swine fever, bovine campylobacteriosis)
* Vertical, to foetus in the uterus (vertical transmission) (*Salmonella* Enteritidis (poultry), human immunodeficiency virus)

# Pre-investigation

## Coordination, confirmation and preparation before going to the field

### Background

Before responding to a report from a pelsa or community, investigators must prepare themselves. They are part of the government system, structurally and administratively, in their district. They should coordinate with Puskeswan or their direct supervisor before responding or conducting field investigation. Confirming the report from Pelsa or farmer is also required, to provide the best services and investigation process when you go to the field. Before going to the field, confirm location, reported animal and time availability.

Preparation is important in investigation. Poor preparation may affect investigation results. Preparation includes ensuring the availability of equipment required for investigation. Equipment to examine/assess animals, take samples, manage treatment and biosecurity/biosafety, logistics and stationery should be ready to be carried to the field.

### Learning objectives

* Participants can explain the coordination line structurally and administratively relationships in accordance with their respective district.
* Participants can explain the importance of confirming disease reports from the fields.
* Participants can mention/list tools and materials to prepare before field investigation.

### Content

Coordination and confirmation

* Dinas in districts commonly have different coordination structures adjusted with local needs, policies and habits. When people report disease occurrence, the coordination process will usually start. Some coordinate among their fellow field officers at puskeswan level, with section chiefs or, even, only to division or echelon 3 levels. However, many of these coordination lines are not working. Coordination is usually done when suspects of strategic infectious animal diseases or outbreaks occur or at least after field officers provide services.
* Confirmation is necessary when a field officer receives report from pelsa or the existing animal health information system. It is done to confirm the report, the site, owner and clinical signs. It provides the basis for preparation for the investigation, for example, sampling equipment, disposables, requirements for protective equipment and disinfectant.
* It will be necessary on conclusion of the investigation to report on the information gathered, including clinical signs, diagnostic possibilities and any treatments and advice provided.

Preparation

* Make a list of equipment, understand their functions and prepare them to be used by investigators in examining sick animals
  + Restraining equipment, such as halter, crush, rope
  + Thermometer
  + Watch or timer for checking pulse and respiration
  + Notebook and pen to record findings (try to emphasize significance of systematic recording)
* Make a list of equipment and consumable goods, understand their functions and prepare them for taking samples from sick animals
  + Knife, scissors, forceps, scalpel, gloves
  + Needles (different sizes for different purposes)
  + syringes
  + Vacutainers – bloods (red lid) for sera, EDTA (purple lid) for bloods/plasma
  + Cotton, tissue, alcohol, etc?
  + Sample media and transport devices
  + Treatments
* Understand and be aware of personal protective equipment (PPE): disposable coverall, apron, cover shoes, gloves, masks, ‘waste’ bag, alcohol tissues. Full PPE is not always available or necessary.
* Requirements for PPE safety equipment will vary depending on the circumstances, and may be as simple as reusable coveralls, disinfectant and gloves.

## Basic Investigation Checklist

|  |  |  |
| --- | --- | --- |
| **Equipment** | **Checkmark** | **Remarks** |
| * Physical examination:   + Stethoscope   + Thermometer   + Flashlight   + others |  | * + - Stethoscope for vets only     - Depending on the information |
| * Sampling   + Venoject tube with coagulant   + Venoject tube without coagulant   + Venoject needle   + Holder   + Plastic flip (for storing samples)   + Scissor   + Forceps   + Object glass   + Label   + Tissue   + Container for samples |  | As required |
| * Field examination   + Rapid test |  |  |
| * Protective equipment   + Glove   + Mask   + Boots   + Apron   + Disinfectant   + Antiseptic   + Disposal bag |  | As required |

## Biosecurity and biosafety (self-protection)

### Background

Animal health field officers undertaking field work may not realize that they are at risk of contracting agents that cause animal disease, for example, anthrax, brucellosis, leptospirosis. The threat will be transmission of zoonotic diseases from animals. Officers should understand these risks and understand biosecurity and biosafety principles that minimize risk of transmission. Protection from disease threat to investigators while providing services should be under consideration at all times. Biosecurity principles should be recognized and followed to minimize the risk of transfer or spread of animal diseases. Good practice by officers will promote good habits when implementing their services.

### Learning objectives

* Participants can explain basic concepts of biosecurity, including principles, risk factors and equipment.
* Participants can explain benefits of self-protection from the biosafety concept.
* Participants can explain principles of biosecurity and biosafety including cleaning and disinfection on/off premises

### Content

Introduction to Biosecurity (note demonstration video available)

* 1. Definition:
  + A series of actions for preventing disease agent to entry, growth and spread from and to a farm.
  1. Biosecurity principles:
  + Preventing disease agent entry
  + Preventing disease agent growth
  + Preventing disease spread
  1. Risk factors
  + humans
  + goods/equipment
  + animals
  + Insects/rodents/wild life
  + Water
  + Feed

Risk factors should be considered and handled properly.Avian influenza, for examplecan be very infectious, whereas tetanus requires special conditions for transmission. Consequences are also important: some diseases, like rabies, are not common, but uniformly cause death in unvaccinated mammals.

* 1. Biosecurity elements
  + Sanitation

Routine cleaning and disinfection of pens, equipment, vehicles or personnel who enter and exit the farm area or the incident site. Cleaning or disposal of equipment used during and post investigation activities such as syringes, test kits and so on.

* + Isolation

Creating and maintaining an environment where animals are separated from disease agent or potential carriers such as animals, humans, contaminated clothes and equipment, contaminated air, water and feed. Protection from vectors – for example ticks, flies, mosquitos may be a consideration for some diseases

* + Movement control

Controlling humans, animals, equipment and vehicles that move in and out of a farm as well as restricting unauthorized people and vehicles from entry to the farm area.

* + Zoning

Biosecurity zoning depends on risk factors of disease transmission transmission to other animals or officers (zoonosis). Infection risks can be high or low.

* 1. Examples of biosecurity implementation
  + Washing hands with soap, taking bath and washing clothes after handling animals
  + Cleaning and disinfecting (spraying, dipping) all goods, particularly vehicles that will enter farm area
  + Spraying pens with insecticide, acaricide or disinfectant where indicated
  + Disposing and burning medical waste after conducting investigation at the incident site.
  + Limiting disease transmission caused by employee mobility and restricting people from freely entering the farm as it may cause disease transmission.
  + Burning or burying carcass of livestock that died after suffering from diseases, infectious diseases in particular
  + Providing disinfection facilities for staffs/employees
  + Removing dead livestock from the pen immediately to be buried or eliminated by the authorized officers
  + Carcass of cattle that died suddenly and bloods discharged from the orifices: MUST NOT BE OPENED.
  + Separating and managing pens for adult cattle, young cows and calves
  + Using a quarantine pen to observe cattle that just arrived or is about to enter a farm
  + Practising appropriate husbandry, e.g. Bali cattle cannot be raised with sheep because of the risk of malignant catarrhal fever, a serious disease in Bali cattle.
  + Separating sick animals from healthy, rearing species separately, separate age cohorts
  + Treating sick animals
  + Regular cleaning and manure/litter removal
  + Vaccinating animals
  + Good husbandry, low stress, good nutrition, clean water

Biosafety (Self-protection)

1. Definition: conditions and efforts to protect yourself from disease agent contamination.
2. Advantages of self-protection

Assuring officers are safe from the threat of disease agent contamination while conducting disease investigation in the fields.

1. Principles of biosafety and prevention of disease transmission must consider:
   * Full PPE is not always available or necessary.
   * **When PPE is used, proper time and equipment** - biosafety before going to and while in the site, minimizing disease agent contamination to officers by protecting their bodies, eyes, noses and skins as well as hands and feet.

**Protective equipment that meets the desired conditions should be used. Full PPE is only necessary when high risk and zoonotic agents are reasonably suspected. Disease agent contamination and operator risk can be minimized using simple precautions.**

* + **Actions necessary before leaving the site**

After the officer completes their work, the used equipment should be, cleaned or eliminated/disposed (including medical equipment and materials used during investigation such as remaining cotton, syringes, vacutainer, etc.). The risk can be managed by burning, autoclaving or applying appropriate disinfectant on materials used and washing hands immediately with appropriate disinfectant, soap and running water. Recognised breaches of biosecurity and/or biosafety should be noted and addressed by the investigator. Examples of breaches of biosecurity/biosafety might be:

* An investigator enters a chicken shed and finds 50% of the chickens dead with many others clearly under stress. He investigates, takes samples and on his way back from the call, stops at another chicken farm to ask how their chickens are.
* An investigator is called out to look at a case of sudden death in a cow. He makes the call and finds that 2 of 4 cattle (one cow, one calf) have died and one other has a high temperature. He decides to do a post mortem on the dead calf and manages to step in the fluid coming from the post mortem. He then does a clinical examination on the cow with fever and collects a history and returns to the office on his motorbike to report.
* Animal health officers are involved in a vaccination programs for control of brucellosis in cattle. Brucellosis vaccine is supplied in multidose vials. The vaccinator, in filling his syringe, inadvertently creates a spray from the needle which goes in his face, close by two other people. He wipes the spray from his face but does not say anything to others. The 10 dose vial is noticed to only have sufficient vaccine for 8 cattle. Two to three week later, two of the operators have headaches and fever, and are prescribed an analgesic by the doctor.

Exercise: What happened in each of these cases? In the last case, did the doctor conduct a proper disease investigation?

Pictures for case studies – consider the risk issues: inseminator, equipment, gloves, environment and the reasons for these items being a risk

# On site: Disease Investigation

## Effective communication

### Background

When investigating a disease event, information is obtained from talking to people, as well as by observing/examining things yourself. Communication skills are needed to obtain good information during disease investigation. In this context, the investigator will focus on effective communication and skills to ask the right questions.

### Learning objectives

* Participants can explain the concept of effective communication for disease investigation.
* Participants are skilful in using of different types of questions.

### Content

Communication is the meaningful exchange of information between and within groups of people. It can occur verbally by using speech or by writing, visually by using pictures, graphics or video or behaviorally by demonstration or body language using non verbal gestures. Combinations of these activities will always occur, and individuals respond differently to each. Good communication is a two way process, where those involved are free to question, provide feedback and reciprocate.

Clients in veterinary field are the entire farming communities (individual/group) or those who are not farmers, but own or raise livestock or interested to raise livestock or care about livestock.

In the context of veterinary services, the animal is the patient and the animal owner who receives the services is the client. It is important to understand owners relationships with their livestock, to enable good communication between the service provider and the recipient.

Animal health officers also have obligations to their employers, and need to communicate information back to animal health systems. This can be done using the iSIKHNAS system of SMS based messages or if iSIKHNAS is not in place then existing reporting systems should be used.

###### People’s perception of their livestock

People value livestock in their life in different ways, depending on their reasons for raising livestock:

* **Food and nutrition**: animals are a very important source of food [protein]
* **Social functions**: animals may raise the social status of their owners. They may contribute to gender balance by affording women the opportunity to own livestock. In some communities, animal have a role in cultural or religious practices.
* **Contribution to crop production**: animals provide draught power and their manure contributes to soil fertility
* **Income generation and wealth accumulation**: animals may enable saving of wealth, providing security and playing a role as a ‘bank account’ and ‘insurance policy’
* **Economic role**: animal production may be an important part of the local and regional economy
* **Livestock and the environment**: livestock production is a part of sustainable land use, although animal production can have both positive and negative impact on the environment
* **Risk buffer**: in some communities, animal production provides alternative streams of income that buffers against the risks of crop failures.

Good services always focus on client or customer satisfaction. To provide good services, we should understand ‘clients’ and their needs.

Investigators should know client expectations and motivations (or lack of) to report service needs.

* Cultural – might have used traditional healers in the past; might not accept ‘Western’ medicine, germ theory etc.; might distrust ‘strangers’ from outside the village
* Financial – veterinary services might be unaffordable; traditional healers or herbal medicines might be cheaper;
* Individual – might prefer to self-treatment based on their own previous experiences; might have tried veterinary services before and dissatisfied with them; might be too shy to contact veterinary services

To enable clients accessing services, field officers should build good relationship and promote themselves by:

* Maintaining regular contact with community members, perhaps regular meeting or catch ups, initiating and returning phone calls.
* Placing a visible sign
* Distributing name/business cards
* Providing good quality services to farmers by responding disease reports, providing scientifically-sound diagnoses and treatments (farmers come, animals are treated and they get better)
* Other creative things adjusted with the socio-cultural condition and potency.

Animal health officers (paravets) must understand the way people view their livestock so they can approach their ‘clients.’ Good understanding about ‘clients’ will help ‘communication’ during investigation or while performing other duties for collecting information.

###### Principles of effective communication

Communication is priority skill required for collecting information during disease investigation. The importance of two way communication should be emphasized. The principles of effective communication include **Respect, Empathy, Audibility, Clarity and Humility**

**Respect**

Respect means positive feelings or respect to interlocutors. Everybody wants to be appreciated and respected and that is part of individual needs.

In his book, “How to Win Friends and Influence People”, Dale Carnegie explained that the biggest secret in dealing with humans is honest and sincere appreciation. This principle of respecting others must always be applied in communication.

**Empathy**

Empathy is an ability to place yourself in a situation or condition faced by others.

Showing empathy means placing ourselves as good listeners, even before people start listening to us.

Understanding proper time for communicating is also a form of empathy.

Examples of empathetic response:

* + Repeating word by word
  + Paraphrasing message content
  + Reflecting feeling
  + Audible
  + Eye contact

**Audibility** means the messages are heard. What should one do?

* + Messages can be understood using simple language combined with speaking clearly. Avoid using language unfamiliar to interlocutors.
  + Convey important messages only. Simplify the message. Speak right to the point. People do not need indirect language.
  + Use body language. Eye-contact, hand movement and body position are easily understood by your interlocutors.
  + Use examples and illustrations. Analogies are very helpful in delivering messages.

**Clarity**

Clarity means clearness of the messages that we deliver. One reason that triggers misunderstanding between one person with another is unclear information.

**Humility**

Humility does not mean low self-esteem. A humble person allows others to speak first and is a good listener.

**Techniques for posting effective questions**

* Asking the right question is the heart of effective communication and information exchange.
* Generally, a simple guide for making question is 5W + 1H (what, who, when, where, why and how) or in Indonesian acronym “MENGAPA SI AKA DIBA?”
* Asking the right questions in certain situation allows us to improve various communication skills, such as:
  + Able to collect better information and learn more,
  + Able to build stronger relationship,
  + More effective in managing people and helping others to learn as well.

**Open question technique**

* used for collecting broader information
* usually start with what, why and how
* allows respondent to give broad answers.

Examples of open questions:

* + What is your livestock problem?
  + Can you explain how you rear your livestock?
  + Why do you think they are sick?

**Closed question technique**

* generally provides limited options for response

Some examples of closed questions:

* + Have you fed your livestock?
  + Do they refuse to eat?

**Probing question technique**

* usually open questions
* directed to encourage respondent to improve response quality and quantity.
* used for getting more detailed information about something or simply for understanding statement/s made by respondent.
* good for clarifying a story or information comprehensively and to collect information from somebody who provides limited information.

Examples of probing questions:

* + Did you see something before it died?
  + What did you mean by poisoned?
  + What do you think about giving worm medicine to your cattle?
  + Can you explain how to make a halter for livestock?

## Taking a case history

### Background

The essence of disease investigation is information collection. The aim is to collect factual relevant information for investigation. The paravet should appreciate any information provided by farmer, no matter how small the information is. The information could be subjective or objective depending on the investigator’s skills in asking questions to obtain accurate and reliable information. Proper and relevant information helps the veterinarian to reach a diagnosis. Information to collect includes current disease history, past disease history, herd or group disease history and environment history. Comprehensive recording of that information is needed for analyzing and making conclusions.

### Learning objective

* Participants can explain 4 histories (current, previous, herd, environment) to collect while conducting disease investigation in the field.
* Participants are skillful in asking questions to get the 4 histories for disease investigation.

### Content

Exploring or digging information based on the systematics of:

* Previous Disease History
* Current Disease History
* Herd Disease History
* Environmental and social community histories related with the livestock management system

Definition of exploring information or history

Exploring case history requires thorough techniques to obtain information about the case history so that information obtained can provide a complete and comprehensive description. Make sure that previous history includes the previous herd and environment histories (traceback).

In exploring the case history, investigators should be able to make questions list based using 5W (**Who, What, Where, When, Why** and in some cases, **How**). Some examples are:

**Who?** (animal): the questions cover individual **or** group.

Example: what animal(s) are sick? Breed? Age? Sex? Number?

**What?** What is wrong? Were there any similar things in the same cattle previously or in other cattle in the same area?

Example: what are the abnormal signs that can be observed? May include specific questions about behaviour, diet, appearance

**Where?** Where are/were the animals when the condition was first noticed?

Example: Where? is the location (the address) of the disease incident, the enclosure/pasture or the address of the farmer? Where do they graze their cattle? etc.

**When**? the questions related with the time of occurrence and progression of the event(s).

Example: when did the paralysis occur in the cattle? If there is any, when did it recur eg. at the planting period or at the beginning of rainy season? When were problems first seen?

**Why**? the questions to support or strengthen the information. Usually, to find out the risk factors towards the disease.

Example: Why are these chickens always at this end of the shed? Why do you use short ropes to tie your cattle?

**How**? the questions regarding with the disease incidence process related with the farm management system or habits of society.

Example: How are cattle raised in that area? When the farmer provides information. Answers to questions like may not add to the relevant disease related information.

**Conduct a systematic information exploration, including:**

**Current Disease History (RPS -Riwayat penyakit yang sekarang)**

The main complaint or illness is the illness that makes farmers (owners) visiting animal health service station asking for help, for instance: bloat, gasping, cough, refuse to eat, diarrhea, etc. Main illness should not be more than one. After revealing the main illness, ask the following questions systematically:

Ask about the animals activities such as:

* *How is their appetite?*
* *Feces? Colour? Consistency?*
* *Is/was there any fever, cough, or limp?*
* *How about cattle condition, thin, medium size or fat?*
* *Is there any weight loss?*
* *Have you given any treatment – what is the response?*

Which part of the animal body, according to the owner/farmer showed signs of illness?

When the illness started or how long it has been occurring

Whether it occurs suddenly or gradually

What about behavior changes? (such as keep making noises, moving legs, breathing, etc)

Are there any other affected livestock?

Whether the animal body condition is worse because of the disease or not

Is there any efforts done by the farmers to help their sick cattle, such as moving the cattle position to right or left side, etc.

**Previous Disease History (RPD - Riwayat penyakit dahulu)**

Ask whether any of his/her animals once got the same illness or not, when and how many time did it happen? What sort of medicines given? Search for disease relevant with current condition and chronic disease, such as:

* *Whether the cattle have been vaccinated previously or not*
* *Have you seen the same clinical signs before?*
* *Have you give worm medicine or other medicine to your cattle?*
* *How was goat condition at that time? Etc.*

**Herd Disease History (RPK - Riwayat penyakit dalam kelompok)**

Herd history is important in identifying occurrence of infectious disease in herds. Some diseases may transmit and spread rapidly as the consequence of farm management and the nature of very contagious diseases.

* *Are there other sick animal in this or nearby areas or herds?*
* *When the clinical signs start to occur?*
* *Has the sick animal received any treatment?*
* *How is the condition of the sick animal currently?*
* *Have there been new chickens introduced to the cage? etc*

**Environmental and social community histories (RLS – Riwayat lingkungan sosial)**

To evaluate farmer’s social status which is relevant with farming method, fodder supply, pasture and the surrounding environment as well as community activities at certain season. This question aims to identify the possibility of disease occurrence due to management.

* *Where do farmers graze their cattle?*
* *Where do the farmers provide food and drink for chickens?*
* *Where are they housed?*
* *Is it planting or harvesting season or farmers using herbicides or insecticide?*
* *Is there any conditions or certain times of gathering or moving cattle to other areas?etc*

**KEY WORDS FOR CASE STUDY**

**Explore information about the diseases histories based on the RPS, RPD, RPK, RLS systematics. Develop a question list for the case**

**Things to be noted in taking history:**

1. Allow farmers to tell about their cattle problems using their own words.
2. Use open and closed questions. Start with open questions first, followed by closed questions.
3. Listen carefully. Give farmers opportunity to complete the story and do not interrupt.
4. Use concise easy to understand questions. Avoid using medical terms which are not understood by farmers.
5. Regularly, make summary of farmers’ statement to verify your understanding. Ask farmers to correct your statement or ask them to provide additional information if it is required.
6. Develop a time sequence of an incident.
7. Take notes that can be referred to when providing information to others

## Physical examination

### Background

Physical examination aims to obtain objective information. It is important to clarify the information received previously, in particular to check the condition of the sick animal. In conducting a physical examination, the investigator should at least have basic understanding about animal anatomy and physiology. They should also have the knowledge about normal condition. In this context, an investigator is not expected to become an expert in conducting a physical examination, but should understand and apply a routine and systematic approach to physical examination and be able to note significant changes from normal.

### Learning objective

* Participants can conduct a basic physical examination.
* Participants can describe possible changes from normal noted during physical examination

### Content

Technique of physical examination in an animal should have a body systems approach. Once learned, it should be repeated regularly so that each body system is examined to the extent that any variation from normal can be detected. Repetition encourages habit and makes clinical examination more reliable. The system described here is adapted to skills of participants. The description is given in the context of large animals, but the same principles apply for pet animals and poultry.

Physical examination includes:

1. Behavior examination – bright, depressed, normal reactions on approach. These signs should be observed before restraining the animal

Conduct observation and seek out for information from the carer of the animal. Obtain as much information as possible, but be aware that answers may not be correct. Check reactions to stimuli e.g. loud noises, movement, reaction to other animals.

1. General appearance, including body condition, look for swellings, lumps, indications of trauma.

A healthy animal has good appetite. A sick animal may have a reduced appetite or it may not eat at all. Evidence of defecation and urination can be looked for at this stage and respiratory rates and often heart rate can be taken without approaching and disturbing the animal. Skin condition can be checked and quiet observation or gentle ‘driving’ may reveal gait abnormalities and lameness.

* Skin and Fur: A healthy animal has clean and well groomed fur, it may be rough or smooth as a breed characteristic. Its skin is smooth, no lesions or scabs found. Dull, dry-look, dirty and ragged hair may be signs of less healthy animal.

1. Temperature

Temperature examination, to determine or measure body temperature of an animal through rectum using digital or mercury thermometer as the tool. To avoid effect of stress on temperature, this should be done as early as possible.

* Restrain the animal
* Stand beside hind leg
* Lift tail, insert thermometer into rectum at least 5cm.
* Allow one minute for mercury thermometer, or follow instruction for digital thermometer (usually until ‘beep’)
* Remove, record result and clean thermometer

Normal body temp degC

|  |  |  |
| --- | --- | --- |
| Animal | Av temp | Increased |
| Cattle | 38,5 | 39.5 |
| Sheep | 39 | 40 |
| Goat | 39,5 | 40.5 |
| Pig | 395 | 40 |
| Horse | 38 | 39 |

1. Respiratory and cardivascular system

* Pulse

Pulse can be taken, in cattle at the coccygeal artery (at the tail head), in horses at the facial artery, and in goats and sheep at the femoral artery. Often cows will show a jugular pulse (neck pulse) which can be seen on quiet observation from a distance. Examination of mucous membranes, for assessment of peripheral circulation, can be done with the digestive system examination.

* Respiration

A healthy animal breathes quietly, alternating between chest and abdominal movements. Hard, gasping and short breaths are signs of sick animal. Nasal discharges and mouth breathing/panting are not normal except in stressful situations

Respiration examination, to determine or measure respiration frequency and type of an animal. The frequency is measured by calculating respiration cycle i.e. inspiration and expiration processes in one period of time, usually one minute

Normal respiration rates

|  |  |  |
| --- | --- | --- |
| Animal | Respiration (breaths/min) | Heart rate (pulse) |
| Cattle | 10-30 | 60-80 |
| Calves | 30-60 | 100-120 |
| Horse | 10-14 | 30-40 |
| Goat and sheep | 20-30 | 70-90 |

If it remains difficult to measure respiration frequency visually, use hand by placing it near the nostril. The breaths will be sensed as result of expiration process, count them within one period of time. Respiration type can be checked by examining inflation and deflation of the thoracic and abdominal walls. The nasal mucosa can be examined with the mouth as part of the digestive system.

* Nose: Abit moist and tend to be wet in the outer part, no lesions, dirt, discharges or blockages. Look for vesicles. Pinch the nose, if liquid comes out meaning inflammation happening inside the nose. It can be clear, white, green, red, black or yellow liquid. A non-clear discharge is not normal.

1. Visual: examination of the eye

Clean, clear and bright eye ball. Some dirt in the corners of the eyes is still normal. Conjunctiva are pink in color and no lesions found. Abnormalities that mostly found in the eyes are too much dirt covering the eyes, swollen eyelid, reddish (inflamed), yellowish (icterus) or pale (without colour). Examine the conjunctival mucous membrane (video) Discharges, blepharospasm

* Restrain animal’s head properly
* Turn upper eyelid out, observe and note colour
* Repeat for lower eyelid

1. Digestive system

* Mouth: Outer lips are clean, smooth and a bit moist. Lips will close properly. Mucous membranes of the oral cavity are evenly pink where there is no pigment, no lesions. Sufficient amount of saliva moistens the oral cavity. The tongue has evenly pink color, where there is no pigment, no lesions and can move freely. Scab in the lips, excess salivation or mucous membrane changes its colour (dark red/purple , yellowish or pale) indicate a sick animal. Tongue does not stick out.
* Mouth examination

Opening the mouth and look for lesions/erosions in lips, gums or tongue.

Tool and material used: Mouth gag/oral speculum/piece of wood

* Restrain animal’s head properly
* Open its lips/mouth till the gingiva is well-seen
* If necessary, put on mouth gag or oral speculum (a stout branch or piece of wood)
* Pay attention to lesion occurrences in lip mucosal, gingiva or tongue
* Look closely at teeth. Observe any deformities
* Smell the breath – foul smells may indicate mouth lesions or digestive disturbance. Get an idea of what normal ruminant breath smells like.

Determining animal age aims at revealing age based on tooth composition and erosion/wear. Tool and material used: Mouth gag/oral speculum/piece of wood

Results: The following are cattle age estimation based on tooth examination. Accurate aging is not necessary for clinical examination.

1. Under two years (permanent incisors are not found yet)
2. Two years (2 permanent incisors)
3. Three years (6 permanent incisors)
4. Four years (8 permanent incisors)

Mucous membrane examination; to determine cardiovascular quality. Mucous membranes may be examined in some places as in oral, conjunctive or vulva mucous membranes. You can now check peripheral circulation by pressing your finger against the gum and then quickly releasing pressure – this will force blood from the capillaries and it will turn pale. Colour should return within two seconds after releasing pressure.

* Abdomen: Check for abdominal distension. Bloat may occur if ruminants are subjected to sudden changes in diet. It will be seen as an obvious swelling in the upper left abdomen.
* Excretion: Animal defecates and urinates easily showing no signs of pain. Faecal consistency is normal.

1. Genito-urinary system: check external genitalia including penis, prepuce in males and vulva/vagina in females. Check for abnormal colour and/or discharge. In females, check udder and teats, is she feeding young? Check milk appearance – blood or pus indicates mastitis.
2. Mucous membrane - Examining vulva mucous membrane (video: Physical examination) Gait

A healthy animal walks with an even gait and places feet evenly without stumbling or knuckling over. It can walk backwards and can recover from sideways pushing. The stride is even and changes of pace are managed without difficulty. Legs can be lifted by hand and flexed in trained animals. Head remains steady when moving. Limping, lackluster or cannot walk are signs of sick or injured animal.

1. Lymph Node

Some superficial lymph nodes can easily be observed/palpated below the ears, and at axilla and inguinal region. Touch the skin and find the bumpy shapes. They are not clearly seen or felt in normal condition. When inflammation occurs, swelling and pain may be evident in the areas where the lymph nodes are located.

## Clinical examination checklist

|  |  |  |
| --- | --- | --- |
| **Part of examination** | **Focus of examination** | **Finding** |
| ***Behavior/general*** | Appetite |  |
|  | gait |  |
|  | Body temperature |  |
|  | Breath frequency |  |
|  | Pulsus frequency |  |
| ***Head part*** |  |  |
| ***Eye*** | *Colour* |  |
|  | *Mucous* |  |
|  | *Discharge* |  |
|  | *Other thing* |  |
| ***Nose*** | *Discharge* |  |
|  | *Odor* |  |
|  | *Muzzle* |  |
|  | *Other* |  |
| ***Mouth*** | *Colour of mucous* |  |
|  | *teeth(condition and permanent teeth)* |  |
|  | *tongue (color, wound, etc)* |  |
|  | *Odor* |  |
|  | *Discharge* |  |
|  | *Other* |  |
| ***Ear*** | *Shape* |  |
|  | *Odor* |  |
|  | *Other* |  |
| Lymph node | Mandibular |  |
| ***Neck Part*** |  |  |
| ***Fore limb*** | Swelling |  |
|  | Wound |  |
|  | Other thing |  |
| **Breast part** |  |  |
| General | Skin |  |
|  | Feather / fur |  |
| Lymph node | Prefemoralis |  |
| **Abdomen** |  |  |
| Rumen | movement |  |
|  | Other |  |
| Umbilicus (newborn) |  |  |
| ***Hind limb*** | swelling |  |
| ***Anus/ Vulva*** | Diarrhea |  |
|  | Mucus |  |
|  | Other |  |

All observations should be recorded. Once the clinical examination is completed the investigator should consider the signs of disease shown and interpret them with the history to decide which diseases may be causing the problem (differential diagnosis list).

Where affected animals have died, a post mortem examination may be performed to look for changes that may provide diagnostic information. Where zoonotic disease is suspected, it may not be advisable to do a post mortem, which could spread infectious material widely. In particular, sudden death and outbreaks of sudden death in ruminants should not be subject to post mortem. Anthrax should be high on the differential diagnostic list in such cases.

## Environmental examination

### Background

Information about environment condition is important to obtain comprehensive information while conducting disease investigation. The importance of the environment is illustrated in the epidemiological triangle above, and should not be ignored. Some environmental conditions can affect the health such as poisoning which may be caused by environmental contamination from chemical waste. For instance, during the planting season where many farmers use chemical fertilizer that can contaminate grass, water and other livestock’s feed. Using the five senses can be used as a simple method of examination. For example, in a commercial chicken farm, strong smell of ammonia can indicate the poor level of cage hygiene and so on. Production systems, husbandry and presence of other species can be important. Examination of the environment is also addressed in the Field Epidemiology course

### Learning objective

* Participants can explain benefits of environmental examination to get objective information.
* Participants can examine environment during disease investigation.

### Content

###### Why environmental examination is important

* + Environmental factors can influence as disease outcomes
  + To identify the environmental factors that predispose towards the increased incidence of disease (class exercise)

###### What do we need to check?

* + Housing and stocking density, fodder and drink container; the cage floor; size of cage; any dangerous materials in the cage; the smell of the cage, what else?
  + pasture area; types of plants, structure of the area, the type of animal, presence of chemical contamination, presence of animal carcasses, presence of sick animal, what else?
  + Presence/absence of insects or other vectors
  + food sources: kind of food, the smell, colour, the presence of chemical contamination; fungi contamination; what else?
  + drinking water sources; around the water sources, color, smell, the presence of chemical and biological contamination; what else?
  + disposal of waste and trash location
  + other species
  + toxic plants
  + access to water, recent flooding

###### What methods are used?

* Using five senses(with care);
  + Smell; odours around the cattle such as; strong smell of ammonia, foul odored, chemically-distinct odor, etc.
  + examine the food and drinking water
  + Sight; look the environmental conditions carefully, changes in color, shapes, etc.
  + Touch; feel the texture of the food, soil, etc
  + Hearing; listening to the noises that can cause stress

## Selecting, taking and submitting relevant samples

### Background

Laboratory testing may be required to confirm or assist in diagnosis. Before taking samples, the field officer should understand selection, collection and handling, and consider the investigation findings to avoid unnecessary samples. Samples are not merely from the livestock but also can be from the animal’s environment such as water, feed and soil. Advice on collection and submission of samples should be provided by the laboratory.

### Learning objective

* Participants appreciate the benefits of diagnostic tests as part of a disease investigation
* Participants know when and how to collect samples for common laboratory tests
* Participants are able to explain proper ways to handle and submit samples for lab examination.

### Content

After completion of history taking and physical examination, an investigator should be able to make a list of possible reasons for the clinical signs that an animal shows. It may be possible to reduce the size of this list by submitting relevant sample for laboratory examination. For example, a cow with a fever and noticeably dark urine may have anaplasmosis, or a kidney infection, or the urine colour may be unrelated to the fever. It will help to get a urine sample for laboratory examination. A blood sample may be of help in diagnosis of a blood parasite or other infection.

###### Sample types:

* Organ samples/intact tissue if a post mortem is carried out. Note: if sudden death do not do a post mortem
* Blood samples
* Fluids samples, swabs (pus, abscess discharge, etc.)
* Dead animal samples (carcass)
* Environmental samples (water, soil and other materials)
* Fodder samples
* Ectoparasites samples and endoparasites if post mortem carried out

Selected based on the direction of veterinarian.

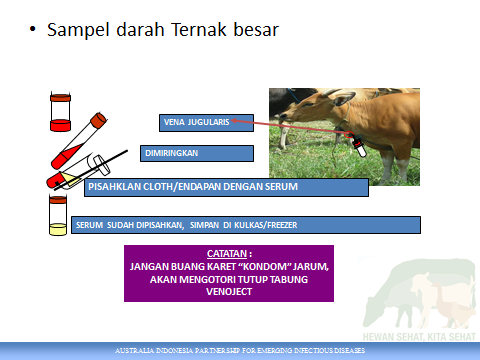
###### Equipment required:

* Knife, scissors, forceps, scalpel, gloves
* Needles (different sizes for different purposes)
* Syringes
* Microscope slides
* Vacutainers – blood (red lid) for sera, ETDA (purple lid) for whole blood/plasma
* Cotton, tissue, alcohol,
* Sample media and transport devices

###### Sampling Method:

* Taking whole blood and blood smear
* Taking swab sample
* Taking feces sample
* Taking sample of residual feed, water
* Taking sample of skin scrapings
* Taking sample of rumen contents and vomit

Sample taking should be adjusted with the required information and conducted under vet supervision.







###### Submission, freight and handling

Officers should liaise with their laboratory for requirements and supply of material for taking samples and for approved methods of sample submission. Often there will be local practices that must be observed – for example, it may not make sense to take or send bacterial samples on a Friday, as they are likely to arrive at the weekend, and will not be useful by the beginning of the next week if the laboratory does not have standby staff.

# Before you leave

### Background

Disease investigation must be accompanied by provision of advice to owners and village authorities as appropriate. If necessary, treatment should be provided and any biosecurity requirements can be applied. The investigator must report the findings of the investigation in accordance with district reporting practice. iSIKHNAS has a facility for doing this by SMS messaging. If available it should be used, as this will link the case to the investigation and any follow-up or laboratory submission that has taken place. It will also include this information in reports as requested at dinas, province and national level. Consideration must be given to biosecurity and thoughtful cleansing/disposal of equipment as required.

### Learning objective

* Participants are able to discuss actions to take before leaving investigation site.
* The use of iSIKHNAS and other systems of reporting is clearly understood

### Content

An investigator should allow time at the conclusion of history taking and clinical examination to collate information obtained so that it adequately leads to the formation of an initial differential diagnosis – a prioritized list of possibilities that could account for the information acquired and the clinical signs that the animal is showing. Report the case in accordance with practice in the district.

* Recording and consulting with vet in case you find any specific abnormal clinical signs.
* Synthesis of information in order to make an assessment of the situation i.e. steps towards making a differential diagnosis. What are the most important clinical signs? What parts of the body appear to be affected? What is the nature of disease progression - acute or chronic? Are there other animals affected?
* Provide a useful clinical service. Within the bounds of your ability and authority, and in accordance with the directions of your supervising veterinarian, do your best to provide advice and treatment.Refer to supervisors as necessary.
* Think about biosecurity. Immediate reporting of findings is mandatory if a priority disease is suspected. If an infectious disease is possible, provide some advice about biosecurity. Review the section on biosecurity and biosafety above. Think about contagious disease. Are there any biosecurity practices that might be applicable in the situation. Refer to a supervisor if you are unsure. Biosecurity issues should be considered where you see many animals affected, serious clinical signs or evidence that the disease is spreading quickly. The equipment you used (including PPE if used) in the visit must be disposed of thoughtfully, with consideration to biosafety and biosecurity, and environmental concerns as applicable. Biosafety and biosecurity are addressed in the relevant sections of this handbook.
* Think about public health. If you think a zoonotic disease is possible, give some advice about the risks and how to avoid them.The zoonotic diseases covered in this project are the priority diseases, rabies, brucellosis, avian influenza and anthrax. Immediate reporting of findings is mandatory if a priority disease is suspected.
* Record your findings by using SMS reporting with iSIKHNAS (or by other means) which can be done on-site saving you time later. The case can be reported and linked to the original alert using the case ID from the pelsa report. iSIKHNAS will require you to identify the type of report along with the findings of the investigation, treatments, sample submissions, or to add comments. Reporting cards can be found at <http://wiki.isikhnas.com/images/6/6b/Cards_v10.1_for_training.docx> ; these cards list clinical signs and their SMS codes and also the iSIKHNAS priority syndromes and their codes. Doing it this way, before you leave, will ensure you don’t forget, and will allow you to find further information while you are there if necessary.
* Leave your contact details for contact by the owner or the community and ask information if there is changed disease incidence. Encourage them to work with the pelsa.
* Schedule another visit to the case location if necessary.

# Follow-up actions

### Background

Responsibilities of the disease investigator do not stop on departure from the site. Even if the case itself does not require follow up, contact should be maintained with the pelsa who reported the case. Any samples taken must be packaged and sent to the laboratory in accordance with the requirements/instructions of the testing laboratory, and any samples for examination by the investigator should be managed appropriately. The information noted from the history and clinical examination should be managed to restrict the differential diagnosis and confirm that any treatment provided has been appropriate. There may be a requirement for further investigation in the case of spreading, wide ranging or novel disease or there may be an indication that control measures are necessary.

### Learning objectives

* Participants are able to compile information obtained systematically for further analysis if required
* Participants recall management and submission of samples.
* Participants understand that good contact with reporting pelsa and livestock owner will encourage continued reporting.

### Content

Field Information frequently is not well arranged. Findings from physical or environmental examination need to be reconfirmed with additional history, and vice versa. Disorganised information may result in poor conclusions. Skills to manage information systematically are required to help the veterinarian. Refer to the check sheet from the clinical examination section.

**Develop a systematic table to make it easier in arranging all information.**

Put findings into the right column in the table below. After grouping all findings into the appropriate column, analyze to find out connection among findings. Is there connection between the findings of history taking and physical examination? Mark those assumed to have connection, using colors or signs that can be easily understood.

|  |  |  |
| --- | --- | --- |
| Findings of history taking | Findings of physical examination | Findings of environmental examination |
| In accordance with history: RPS, RPD, RPK, RSL | In accordance with the examination table based on the region | Write down all findings |
| Write down the findings of the 3 parts that are likely related. |  |  |

## Examples of information analysis

|  |  |  |
| --- | --- | --- |
| Findings of history taking | Findings of physical examination | Findings of environmental examination |
| * Cattle cannot stand * It has been sick since the morning, all of a sudden. * It does not want to eat and drink * Its mouth is bit foamy   Never been sick with these signs  But, neighbor’s livestock once had this and died   * The cattle is grazing in a communal pasture   No other livestock got sick with these signs  Only about 5 families that release their livestock for grazing  The grass is relatively fertile   * It is now planting season in that area * Paddy planted next to the rice field was given fertilizer yesterday | Relatively fast respiration   * Negative/no appetite * It does not want to walk as it can’t stand * Body temperature is 39.5°C * Wounds in mouth * Enlarged lymph node in submandibular   Normal eyes  Dry nose  No foamy marks in mouth   * Wounds found at the right back leg | No cattle was in the pasture for grazing  The water comes from the irrigation channel   * The water is a bit murky * Fertilizer bag found next to the channel |
| Findings marked with ticks (checkmarks) are interconnected. For instance, it does not want to eat as it has wounds in its mouth and enlarged lymph node; it cannot stand as it has wounds in its right back leg. The planting season may link with the fertilizer and lead to possibility of poisoning. | | |

|  |  |  |
| --- | --- | --- |
| History | Clinical examination | Environmental examination |
| Mature cow  Poor body condition  Not eating well  Altered voice  Another cow died last year  Has not had a calf for 2 years  Does not like to walk out in morning  The cattle are grazing in a communal pasture  No other livestock got sick with these signs  It is now planting season in that area  Paddy planted next to the rice field was given fertilizer last week | Pulse and respiration normal  Mucous membranes congested (dark red), refill >2 secs  Temp 38.5  Grunts when rising from ground  Reluctant to move  Sensitive to pushing on ribs  ? swollen abdomen | No other cattle ill  Enough grass  Other cattle in reasonable condition  No fences, but untidy workshop in grazing area  Water looks OK  No extra feed  Fertilizer bag next to channel |
| Write down the findings of the 3 parts that are likely related. |  |  |

|  |  |  |
| --- | --- | --- |
| History | Clinical examination | Environmental examination |
| Foal 6 months  Other horses, including foals in area  Diarrhea  Tries to vomit  Sometimes seen in other foals  One foal died last week, looked same  Poor body condition  It is now planting season in that area  Paddy planted next to the rice field was given fertilizer last week | Rough coat  ? weak  Coughs occasionally, looks at flank  Temp 38  Mucous membranes pale  Pulse and respiration normal  ? swollen abdomen | Enough grass  Other mature horses in reasonable condition  No fences, but untidy workshop in grazing area  Water looks OK  No extra feed  Fertilizer bag next to channel |
| Write down the findings of the 3 parts that are likely related. |  |  |

# Reporting to iSIKHNAS

On completion of the investigation, a report is made for the supervisor, vet, or to the information system. The report, will allow all components in the system of animal health services to plan management, control and prevention strategy. The integrated animal health information system, iSIKHNAS, has been developed as an SMS and Web based information system. Through iSIKHNAS, it is expected that the officer can easily, quickly and practically do the reporting as well as to see the case progress through the Web.

* Immediate reporting of findings is mandatory if a priority disease is suspected.
* Follow up with case outcome (maintain contact)
* Follow up on laboratory test results
* Consider other possible actions:
  + Population-based investigation (see field epi. Course)
  + Surveillance (see Surveillance course)
  + Population disease management (for specific diseases)

## Points to note for investigating officers

Promote advocacy through musrembang activities, to provide ‘bottom up’ advice to Dinas/BAPPEDA. Promote disease outbreak and control program management and control. In the long term these activities will require adequate planning to obtain funding (see Budget and Planning and Budget Advocacy courses in the iSIKHNAS wiki).