ANIMAL HEALTH

Level – III

Based on March, 2022 Version 4 Occupational Standard



Module Title: Providing Routine Veterinary Clinical Service

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Introduction to the Module

This Module covers the knowledge, skills and attitude required to prepare materials, equipment, work area and perform routine clinical examination of animals. It also comprises knowledge and skill to treat basic animal problems and conduct post treatment advice to the owner of animals.

LG #12	LO #1- Perform general and systemic clinical examination

Instruction sheet 1

This learning guide is developed to provide you the necessary information regarding the following content coverage and topics:

- Preparing of working area, materials, equipment and tools for clinical services
- Restraining of animal for clinical examination.
- History taking
- General and systemic clinical examination
- Observing and recording abnormalities and behavioral changes
- Clinical sample collections and sample processing.

This guide will also assist you to attain the learning outcomes stated in the cover page. Specifically, upon completion of this learning guide, you will be able to:

- Prepare and apply working area, materials, equipment and tools used for clinical services are according to the enterprise guide lines.
- Capture and or restrain animal and humanely and safely for clinical examination.
- Record detail case history in consultation with the owner.
- Carry out general clinical examination according to the standard operating procedures
- Carry out systemic clinical examination according to the standard operating procedures
- Observe, record and report abnormalities and behavioral changes of the animal
- Collect samples in accordance with the standard operating procedures.
- Handle cases based on the diagnostic finding in consultation with supervisor of veterinarian

Learning Instructions:
1. Read the specific objectives of this Learning Guide. 2. Follow the instructions described below. 3. Read the information written in the information Sheets 4. Accomplish the Self-checks 5. Perform Operation Sheets 6. Do the “LAP test”

Information Sheet 1

1.1 Preparing of working area, materials, equipment and tools for clinical services

Introduction

A veterinary career is very specialized, requiring specific equipment and instruments. As with any profession, there are certain pieces of equipment that are "must-haves". These tools, devices and technology allow vets to provide top class medical care to their pet-patients. From exam tables and lighting to autoclaves, these tools and tech are must-haves for any new vet clinic. Here are our top picks for the equipment you need. At the bottom of this blog you'll also find a complete list of all the tools you will need.

1.1.1 Prepare clinical working area

This division includes the provision of animal health care and control activities for farm animals or pet animals. These activities are carried out by qualified veterinarians in veterinary hospitals as well as when visiting farms, kennels or homes, in own consulting and surgery rooms or elsewhere**.** With the number of people and animals that pass through veterinary clinics daily, it is all too easy for germs and infections to spread. It is important to know what veterinary cleaning supplies should be used and how to properly disinfect and clean a veterinary practice. Disinfectants play critical roles in preventing infectious disease transmission in veterinary medicine. From use as a presurgical scrub to disinfection after an outbreak, these products are relied upon by veterinarians for safe and effective germicidal activity. Disinfectants are usually applied to inanimate surface:

- **Alcohols:** are one of the most popular antiseptic and disinfecting products, used every day in veterinary clinics and laboratories. Although many alcohols are germicidal, the two most commonly used as disinfecting agents are ethyl and isopropyl alcohol.
- **Aldehydes:** Two related aldehyde disinfectants are formaldehyde and glutaraldehyde (GLT).
- **Chlorhexidine(Chx):** is popular synthetic cationic antiseptic compound

Working area for a veterinary hospital, as well as for open area and mobile vet clinics:

- **Veterinary Hospital**: A veterinary hospital typically has a designated clinical area where the majority of medical procedures and examinations take place. The clinical area is usually divided into different sections, such as examination rooms, treatment areas, surgery suites, and recovery rooms. These areas are typically equipped with a range of medical equipment such as surgical instruments, x-ray machines, ultrasound machines, and other specialized equipment. In addition to the clinical area, a veterinary hospital may also have a reception area, waiting room, administrative offices, and storage areas for medical supplies and equipment.

- **Open Area Clinic**: An open area clinic usually refers to a clinic that is located in an open area like a park or public space. It typically involved setting up a temporary or semi-permanent tent-like structure, with basic diagnostic equipment and treatment supplies. These clinics can provide basic health check-ups, vaccinations, and treatment of minor illnesses and injuries for animals. Often the teams of the open area clinic consist of veterinarians, technicians, and volunteers.
- **Mobile Vet Clinic**: A mobile veterinary clinic is basically a hospital on wheels which allows veterinarians to provide medical care and consultation services to animals from their designated homes or business. These clinics are typically equipped with X-ray machines, lab equipment, diagnostic testing tools, surgical instruments, and a pharmacy onboard. Mobile vet clinics require significant capital investment but proved as more effective than traditional clinical practices.

1.1.2 Materials, equipment and tools for clinical services

a) **Equipment:** refers to tangible and durable assets that help in the production of other goods and services. Examples of equipment are things like machinery, tools.
b) **Materials:** form the base of the product
c) **Tools:** multi-purpose, small, handy objects with which to work in a particular situation.

List of Veterinary Equipment and Tools:

- **Obstetrics instruments:-** Calf puller, Hook handle, Krey hook, Obstetrical cable swine snare, Obstetrics forceps, Obstetrics hook, Vaginal speculum
- Hoof instruments:-Hoof cutter, Hoof and claw trimmer, Crease nail puller, Hoof nipper
- **Surgical instruments:-** Forceps, Scissor, Needle and needle holder, Blade and bade holder, Suture materials..
- **Instruments used for castrations**:- Burdizzo and Emasculator
- **Personal protective equipments**: - glove, Gowon, apron, hat, mask…

- **Diagnosis materials :-** Microscope**,** Autoclaves**,** Centrifuge**,** Refrigerator**,** Incubator
- **Restraining materials:** - rope, crush, muzzle, bull holder etc.

1.2 Restraining of animal for clinical examination

Restraining is the term used to imply control of an animal and may be necessary for medical reasons and non-medical procedures. Animals are often resisting to the clinical examination procedures. The animal must be restrained so that it can be examined carefully, safely and with confidence. Since animals often resist many of the clinical examination procedures, it may be necessary to employ some suitable means of restraint, in order to be able to carry out the examination safely and without danger to the clinician or his assistants.

1.2.1 Methods Restraining

The methods available may be classified as:

I. **Physical restraining.**
II. **Chemical restraining**
III. **Verbal/Moral restraining**

I. Physical restraining.

Physical restraint is the use of manual of mechanical means to limit some or all of an animal's normal movement for the purpose of examination, collection of samples, drug administration, therapy or experimental manipulations. Control or restrain the animal using physical methods; this may need to be carried out in conjunction with chemical restraint methods.

Physical control or restraint may be essential in some situations, for example:

- To prevent worsening of an incident, especially if human life or safety is involved
- To enable an entrapped animal to be released
- To remove the animal from a place of danger to a place of safety
- To prevent injury to emergency responders
- When administering first aid to the animal

Restraint devices should be suitable in size, design, and operation to minimize discomfort and injury to the animal.

Physically controlling or restraining an animal may include using equipment such as:

- ✓ **Muzzles**: May be purpose-made or improvised, and often used for dogs. Assessment of the animal will determine the type of muzzle required
- ✓ **Slip leads**: Can be used to control a non-aggressive dog. Can be used as a pair, one from each side of the animal, (known as double leading) to provide additional control

- ✓ **Nets**: Can be used for many species of smaller animals, but need to be suitable for the size and strength of the animal.. Other types, such as throw nets or 'walk toward' nets can be used
- ✓ **Extension poles**: Lightweight, interlocking, aluminum poles that can provide additional reach when controlling or restraining an animal
- ✓ **Towels, cloths or blankets**: May be purpose-made or improvised, and can assist with the capture and control of a range of smaller animals and deer. Covering the head or eyes may calm some species
- ✓ **Halters:** May be purpose-made or improvised, and are mainly used to control the head of larger domesticated animals, or if the animal is being chemically restrained. Can be used for smaller livestock such as goats, sheep and young bovines
- ✓ **Head collars**: Purpose-made devices, in a range of sizes, primarily for the head control of equines

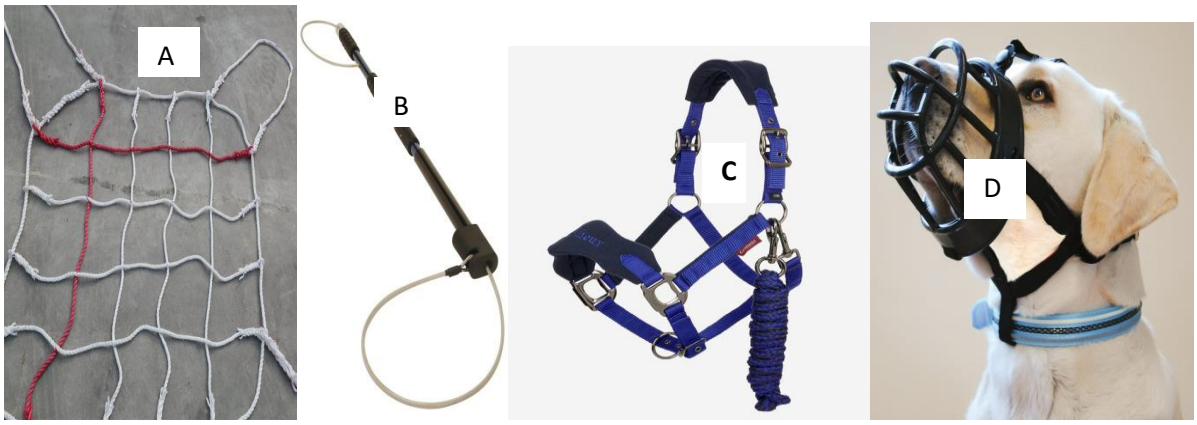


Figure.1.1. physical restraining material (net(A), extension pole(B), muzzle(c) and head collar(D)

- ✓ **Nose Lead Technique:** The nose lead or nose tongs are a device that is placed in the nares that allows pressure to be applied to the septum distal to the cartilage.



Figure: 1.2 nose lead technique

- ✓ **Burley Hitch technique**: The Burley hitch is used to cast an animal for procedures requiring recumbency of the patient.



Figure: 1.3. Burley Hitch techniques

- ✓ **Reef Hitch:** The Reef hitch is a technique using a rope to induce recumbency in cattle.
  This technique is performed with a shorter rope than the Burley hitch.
  It is not recommended for pregnant animals.

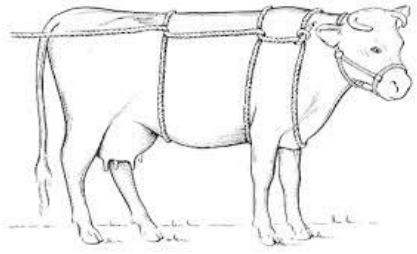


Figure: 1.4 Reef Hitch techniques

- ✓ **Tail Lift:** The tail lift acts as a distraction to prevent kicking in cattle. The animal is more concerned with the discomfort associated with the tail lift than the person touching another portion of the anatomy, for example, the udder.
- ✓ **Bird restrain:** You should always use both hands to support the bird. Carry poultry in a sack or bag. You must use only rigid containers with enough space and ventilation.



Figure: 1.5 hen restraining

II. Chemical restraining

A chemical restraint is the intentional use of any medications to subdue, sedate, or restrain an individual. Chemical restraints have been used to restrict the freedom of movement of a patient—usually in acute, emergency, or psychiatric settings. Drugs that is useful for this purpose includes: **Acepromazine, Acetylpromazine, Chlorpromazi, Promazine and Trimeprazine;** members of this group can be used in most species of animals.

III. Verbal/Moral restraining

It is more practiced by owner e.g., feed provision, massaging, calling name of animal. The verbal methods of restraint is practiced by owner, the owner can restrain the animals by calling name of animals, feed provision and massaging of animals.

1.3 History taking(Anamnesis)

History taking is the process of taking information on animal patient from owners about its illness, onset of illness and feeding practice through careful questioning of the owner. In Veterinary practice, the disease is presented indirectly in the form of a complaint by the owner or the attendant. Thus, it is very necessary to have all the information from the owner. Most of the time, the owner or attendant fails to provide pertinent and adequate history and inaccurate history may lead to misdiagnosis. The clinician must substantiate these with rational question utilizing professional knowledge .Without knowing history of animals it is difficult to diagnose disease problem of patient animals. Therefore, the history should be taken from the owners of the patient and recording the owner's complaint. Disease information should include the group(s) affected, the numbers of animal affected (morbidity) and the identities of the animals affected.

The number of animals that have died (mortality) should be established. In order to get the accurate and complete history of patience the following things should be focused; patient data, present history, past history and environmental history. Patient data is essential to identify the patient and it includes:

- Owner's name,
- Owner'saddress:
- address,
- telephone,
- kebele,
- peasant association,
- species,
- breed,
- sex,
- age,
- ID No.,
- bodyweight,

1.3.1 Present history

Present history of patient includes of recording the sequential events from the start of the patient chronic. Questions about physiological functions such as appetite, urination, defecation, rumination, respiration, sweating, milk production, gait, posture and also of the first symptoms shown by the animal should be asked. All these information deal with the current problem of the animal and the events associated with it.

The points which going to be asked during present history Locations of the problems ,the main attention at the complaint that a farmer has to say and from there clinician can tentatively say can be listed as following:

- Digestive system involvement will be shown as absence of rumination, appetite, bloat or diarrhea
- Respiratory system involvement will be indicated presence of nasal discharge, coughing, dyspnea.
- Urinary system involvement will be manifested as frequent urination, passing red coloured or cloudy urine.
- Musculoskeletal and nervous system involvement will be manifested as lameness, inco-ordination, and paralysis.
- Nature of illness**:** The clinician should be able to assess and find out the time of onset of disease, any change management practices and signs noticed by the farmers.
- To assess to know the duration of disease whether it is peracute, acute, subacute or chronic
- To know number of animal diseased and morbidity rate and mortality rate of animals
- Determine whether any drug has been given for animals, before patience come to clinic for assurance.

1.3.2 Past history

Inquiring into the past history may help in arriving at a diagnosis. History of drenching a day or two earlier may cause aspiration pneumonia. History of past disease may be corelated to the present illness. Past history will also give idea if such condition prevailed previously in the area:

- Ask if such condition was reported previously too (reveal endemic nature of disease, or occurrence of a new disease)
- Does this occur at certain period of time? (find out the seasonal occurrence of the disease)
- Was the disease reported form other places in the locality? (area of spread / occurrence can be found out)
- Has any animal recovered from such a sickness? (to aid in prognosis)
- Is the disease restricted to certain age group / sex?

1.3.3 Environmental history

Environment or surrounding of the animals may help in the diagnosis of disease. Animal grazing on pasture irrigated with sewerage water may suffer from nitrate poisoning. Parasitic diseases are more in animals, which are kept in marshy lands. Recent spraying of weedicide or insecticides may poison the animals. Environmental history can be divided into outdoor environment and indoor environment.

- **Outdoor environment history:** It regard to the topography of land where animals are reared, vegetation, type of agriculture practiced in the locality, use of chemicals in agriculture (pesticide, weedicide) and system garbage disposal in the area. Animals that are grazed are likely to be infested by parasites and prone to vector borne diseases.
- **Indoor environment history**: It regards with the types of animal house. The following should be look assessed how is the house of animals is designed:
  - ✓ If there is proper ventilation
  - ✓ In the rural area, traditionally animals are housed in the ground flfl oor of the house where there hardly any ventilation and this will predispose the animals to respiratory diseases.
  - ✓ If the animals are stall fed check
  - ✓ If the animals are provided with enough drinking water,
  - ✓ If the floor is dry and clean, damp and dirty floor may lead to mastitis in milking animals,
  - ✓ If the bedding materials are used
  - ✓ If the animals are housed separately

1.4 General and systemic clinical examination

Introduction

Clinical examination is a fundamental part veterinary diagnosis. It provides the veterinarian with the information to determine the disease or diseases producing the clinical abnormalities. Additionally, the information derived from the clinical examination should assist the veterinarian in determining the severity of the pathophysiological processes. The organs or systems involved, the location and type of lesion present, the pathophysiological processes occurring and the severity of the disease can be deduced from the information gained during the clinical examination.

The success of clinical examination relies heavily on the knowledge of the clinician and usually assumes a single condition is responsible for the abnormalities. Many clinicians begin their examination by performing a general examination which includes a broad search for abnormalities.

The system or region involved is identified and is then examined in greater detail using either a complete or a problem oriented examination. For this sound knowledge of Anatomy, Physiology, Pathology and Animal behavior, skills in the methods and techniques of clinical examination, knowledge of etiology, clinical sign and pathogenesis of the diseases are the basic requirements for clinician to make diagnosis.

The clinical examination ideally proceeds through a number of steps. Observations of the patient and environment are performed next. Finally a clinical examination of the patient occurs, followed by additional investigations if required.

1.4.1 General clinical examination

Symptoms and signs elicited from the general aspects of the history and physical examination are the first signals that alert clinicians toward specific findings that help make diagnoses. The instruments necessary for this examination include only weight scales, a thermometer, and a reflex hammer. A sharp eye and a keen mind, however, are more valuable than all the instruments in the medical bag. The following comments provide a framework on which the more detailed general examination may be viewed.

Factors that should be considered during general clinical examination include;-

I. Distinguishing marks
II. Physical condition of the animal
III. Behavior (Demeanor)
IV. Posture of the animal
V. Gait
VI. Body temperature
VII. Pulse
VIII. Respiration. Etc

I. Distinguishing marks (identification of patient animal)

It refers recording of owners name, address, sex, species age, bread color of the animal. Importance of identification of patient is to differentiate, recognize or to avoid confusion between examined and none examined animal.

Example: Sex- milk-fever in female and prostitutes in male

Age- colibacillosis , Rotavirus infection in young animal and TB old

Color - white or grey colored animal exposed to photosensitization.

II. Physical condition of the animal

The condition of the body of the animal can be assesses by visual inspection and palpation of certain parts of the body including ribs, spine of vertebrae, shoulder, pelvis, and tail. Body conditions examination /scoring. The body condition score (BCS) is a useful tool for evaluating the overall health and well-being of a variety of animals, including cattle, horses, sheep, and goats. The BCS is typically measured on a scale of 1-5 or 1-9, and it assesses the amount of fat present on an animal's body.

A proper BCS not only serves as an indicator of good health but also helps owners and veterinary professionals make informed decisions about feeding and management practices to maintain the animal's health and productivity. A low BCS can indicate potential health problems such as poor reproductive performance, decreased immune function, and an increased risk of metabolic disorders in some species. On the other hand, an excessive BCS is associated with reduced exercise tolerance, increased risk of injuries, and other potential health problems depending on the species. Regular monitoring of BCS can help ensure that animals are receiving adequate nutrition and care for optimal health and productivity.

III. Behavior of animal

The general behavior of animal should be well-known with due attention to the temperament. In disease conditions animals behavior will be changed example feeding behavior changed (anorexic or loss of appetite), increase or decrease reaction to external stimuli.

IV. Posture

Change in normal posture of the animal may indicate some disease but is may have significance when occurs with other signs of disease. Abnormalities of posture can be:

- Congenital (Hereditary) - example developmental defects during pregnancy
- Acquired (disease) which is manifestation of disease of bone joints, ligaments and tendon

Most postural aberrations associated with disease examples include: Laminitis, Arching of the back, Equine colic, tetanus , milk fever (Hypocalcaemia etc...

V. Gait

Is the movement of animal and involves the locomotors system. It disturbance can be appreciated by allowing the animal to move in different direction hence we can assess the rate, length, force and direction of movement. The movements of legs may show stiffness, staggering, lameness and exaggerated flexion. Disturbance in locomotion may be the result of some disease of nervous system, musculoskeletal system and poisoning and or nutritional deficiency. Example

- Sway back: - is copper deficiency characterized by progressive cerebral demyelization. Occur in last trimester of pregnancy in new

- Ataxia Loss of the power of governing movements - enzootic ataxia
- Circling movements: - Listeriosis, Coenerosis.

VI. Body Temperature

Terminologies

- **Hypothermia** :- is drop in body temperature blow the normal (subnormal) it can occur during old age, emaciation, malnutrition, terminal stage of many diseases , shock and hypocalcaemia
- **Hyperthermia: -** Is an increase in body temperature above the critical points due to physical factors.
- **Fever: -** It is increased in body temperature above the critical points due to some circulating substances such as bacteria virus protozoa, fungi and endotoxcins.

Rectal temperature is the most convenient site to take body temperature since it is the most representative of internal body temperature of the animal. When rectal temperature becomes unreliable particularly in female we can take vaginal temperature which is $0.5c^0$ higher than rectal temperature. For male we can take from prepuce and oral mucosa during unreliable rectal temperature.

Rise in body temperature can be physiological or pathological

A. Physiological could be due to:-

- Frequent and excessive feeding (increase metabolism)
- Strenuous forced exercise
- Exposure to high environmental temperature.
- Excitement or disturbance.

B. Pathological could be due to:-

- Febrile disease (infection)
- Local inflammation of the rectum
- Disturbance of sick animal for clinical examination.
- Rectal paralysis (Retained feces with bacterial activity)

Table 1.1. Normal range of rectal temperature

Animal	Temperature °C	
	Range	Average
Horse	37.2-38.0	37.6
Foal	37.5-38.6	38.0
Ox, over 1 year	37.8-39.2	38.5
Calf, up to 1 year	38.6-39.8	39.2
Sheep	38.9-40.0	39.5
Goat	38.6-40.2	39.4
Pig (adult)	37.8-38.9	38.3
Piglet	38.9-40.0	39.4
Dog (large)	37.5-3 8.6	38.0
Dog (small)	3 8.6-39.2	38.9
Cat	37.8-39.2	*38.5*

VII. Pulse

It is a beat produced by the pumping activity of heart and assessed by finger, used to assess the condition of cardiac function of peripheral circulation.

Terminologies

- **Bradycardia** -The slow pulse rate or decrease in heart rate. It is caused by hypothermia, comma, and heart block (due to infection, infarct or depressive drugs). Tumor or Abscess in cranium, alcohol or lead poising.
- **Tachycardia** - Increased pulse rate or increased heart caused by pain, excitement, hypertension, hyperthermia, adrenergic drugs, myocarditis, lightening stoke, electric shock, heart infection, infarction or septicemia toxemia.

Table 1.2. Normal range of pulse rate per minute

Animal	Range
Horse	28-40
Colt (yearling)	70-80
Cattle	55-*80*
Calf (young)	100-120
Sheep, goat	70-90
Pig (adult)	60-90
Pig (young)	100-130
Dog (large)	65-90
Dog (small)	90-120
Cat	110-130

VIII. Respiration

Terminologies

- **Respiratory rate** - is number of breath per minute. It can be increased due to excitement exercise, fever, obesity, and cardiac and lung disease and rarely, it can be decrease due to hydrocephalus or in stenos is of URT. Respiratory movement can be assessed by: Nostril movement, Thoracic movement (intercostals) and Movement of the abdomen.
- **Hyperpnoea** - Increased respiratory rate, with or without an increase in the amplitude of the movements.
- **Polypnoea**- increased respiratory frequency with reduction in depth of the associated movements.
- **Oligopnoea** –
- decreased or retarded respiratory frequency.
- **Dyspnoea** - difficulty in respiration, causing apparent distress to an animal.

Table 1.3. Normal range of Respiratory rate per minute

No	Species of animals	Respiration rate/minute
1	Cattle	25 - 30
2	Horse	8 – 16
3	Sheep	10 – 20
4	Goat	10 – 20
5	Pig	10 – 20
6	Dog	16 – 30
7	Cat	20 – 30
8	Chicken	15 – 30

VX. Visible Mucus membrane (VMM)

Clinically important mucus membranes are:-

- Conjunctiva
- Nasal & buccal
- Vaginal and rectal
- Urethral & prepucial

During inspection of VMM consider the following

- Pallor (pale or white membrane) anemia
- Hyperemia- congestion or inflammation
- Cyanosis (bluish discoloration) – Anoxia or Hypoxia (Decrease oxygen in tissues)
- Jaundice (ictus)- yellowish discoloration (liver disorder, haemolysis)
- Discharge- exudates, hemorrhagic
- Eruptions, Ulceration, swelling.

X. Examination of superficial lymph nodes.

Normal lymph nodes are firm consistency, smooth structure palpation but lobulation is distinctly palpable in the larger nodes. Lymph nodes of clinically important include.

- Pre scapular
- Pre femoral
- Sub-mandibular

XI. Rumen Motility

It measured by applying sufficient pressure with hand on left flank which may reveal hypo motility, hyper motility or normal (2-3/min).

XII. Examination of the faeces

Frequency of defecation - gives evidence as to the intestinal motility. Infrequent motility with dry feaces shows hypo-motility while frequent defecation is the indicator of hyper-motility. Character of the faces and abnormal constituents is faeces: colour, odour, consistency and volume faeces should be examined. Enteritis of the upper and lower tracts may cause bloody, watery and pungent faeces depending on the aetiology. E. g. collibacillosis, samonellosis, John's disease. Faecel samples can be also submitted for laboratory examination with the aid of microscope. Direct faecel smears, flotation and sedimentation are used to detect parasitic eggs. Microscopic bacteriological examination is also helpful.

1.4.2 Systemic clinical examination

Systemic examination reviews the major systems of the body like the Central nervous system, Respiratory system, Cardiovascular system and Gastrointestinal system.

Generally, there are 4 parts of physical examination:

- **Inspection**: Looking for signs
- **Palpation**: Feeling for signs
- **Percussion**: Tapping for signs, used when doing a lung, heart or gut examination.
- **Auscultation**: Listening for sounds within the body using a stethoscope, or in olden times, purely listening with direct ear.

The application of clinical methods in a systematic manner enables the veterinarian to recognize a iling, as distinct from healthy, animals. An important prerequisite is complete familiarity with the state of health in all species. The presence of disease is revealed by certain changes in the structure of an organ or tissue and/or its function, as well as in the behavior of the whole living organism. Such changes, which may be quantitative, qualitative or both, are described as the *clinical signs* of disease, and the process of deducing from them the nature of the disease that is present is described as ‘making a diagnosis’

Systemic examination is currently divided into four segments:

- Central Nervous System
- Respiratory System
- Cardiovascular System
- Abdomen Examination

Clinical examination is a fundamental part veterinary diagnosis. It provides the veterinarian with the information to determine the disease or diseases producing the clinical abnormalities. Additionally, the information derived from the clinical examination should assist the veterinarian in determining the severity of the pathophysiological processes. The organs or systems involved, the location and type of lesion present, the pathophysiological processes occurring and the severity of the disease can be deduced from the information gained during the clinical examination. The success of clinical examination relies heavily on the knowledge of the clinician and usually assumes a single condition is responsible for the abnormalities. Many clinicians begin their examination by performing a general examination which includes a broad search for abnormalities. The system or region involved is identified and is then examined in greater detail using either a complete or a problem oriented examination. For this sound knowledge of Anatomy, Physiology, Pathology and Animal behavior, skills in the methods and techniques of clinical examination, knowledge of etiology, clinical sign and pathogenesis of the diseases are the basic

requirements for clinician to make diagnosis. The diseased animals which are presented to veterinary clinic can be analyzed by veterinarian or clinician, the clinician approach through asking the owners complaint, which request for professional assistance by giving animal history.

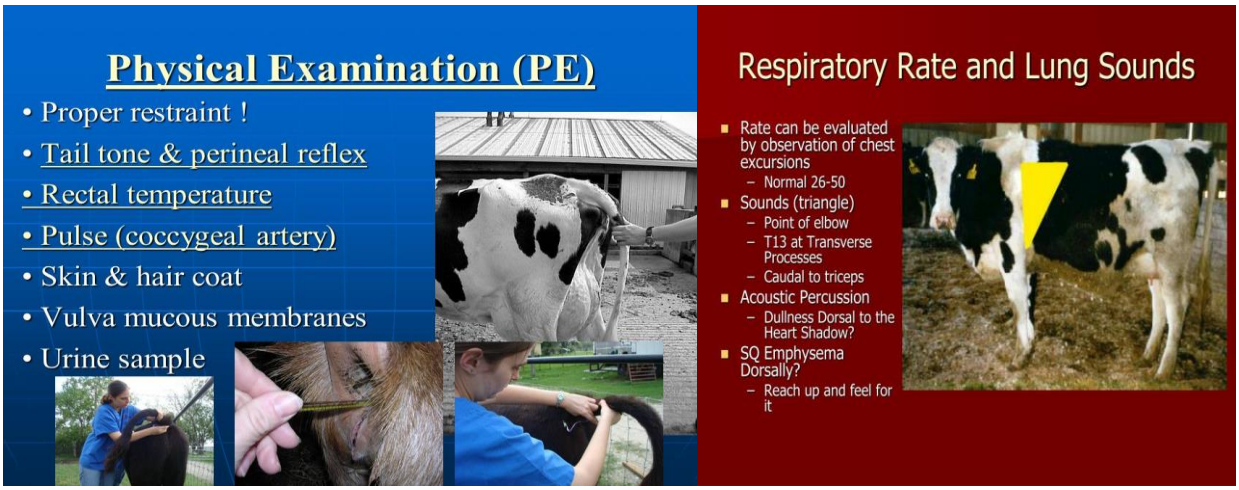


Figure 1.5: Site of physical examination

1.4.3 Clinical Diagnosis

Diagnosis is an art or act of identifying a disease from its signs and symptoms, and also through various laboratory tests. In the investigation of any animal disease problem, the veterinarian must undertake a careful and thorough clinical examination with the objective of recognizing the nature of the affection, so that effective treatment and, where practicable, control measures are adopted.

It is not always possible to make an exact diagnosis, that is to establish not only the site, but also the cause and nature of the abnormality, but a special effort should be made to establish at least the etiological diagnosise. To determine the cause of the disease, for without this knowledge treatment cannot be other than empirical. If the disease is not recognizable with certainty, the diagnosis is said to be tentative.

The study of clinical signs is a necessary preliminary to the study of diagnosis. The student must therefore make himself familiar with the appearance of the various clinical signs in each species. If clinical signs are such important in diagnosis, then the student has to learn the methods used in detecting them.

Clinical diagnosis is a diagnosis made on the basis of medical signs and patient-reported symptoms, rather than diagnostic tests. Laboratory diagnosis. Is a diagnosis based significantly on laboratory reports or test results, rather than the physical examination of the patient.

1.5 **Observing and recording abnormalities and behavioral changes**

Veterinarian and animal health technician needs to recognize and act appropriately when patients deteriorate. Abnormality can be defined as a deviation from physical and mental health or anything that deviates from health is regarded as abnormal. Any infectious and non- infectious diseases cause different abnormality and behavioral changes on patients. Such abnormality may include decrease feed intake, fevered, anoxic, lameness, swollen of body part, loss of normal body conditions, heat, pain, redness of different organs, fever, diarrhea, fatigue, muscle aches, coughing, shortness of breath; cold sweat; nausea; or lightheadedness, arm weakness, difficulty with speech, rapidly developing dizziness or imbalance, loss of vision, confusion, or severe headache. Examples of behavior change include but not limited to increasing physical activity and exercise, improving nutrition, reducing drinking, and reduction in stress, anxiety, depression and sense of subjective well-being.

1.5.1 Some of the Sign of disease

- **Signs of reproductive health problems:** include bleeding or spotting between periods; itching, burning, or irritation genital area; pain or discomfort during sex; heavy or painful menstrual bleeding; severe pelvic/abdominal pain .
- **Unusual vaginal discharge:** feeling of fullness in the lower abdomen; and frequent urination or urinary urgency..
- **Signs of lung problems**: coughing up blood, shortness of breath, difficulty breathing, chronic cough, repeated bouts of bronchitis or pneumonia, and wheezing
- **Signs of stomach or digestive problems:** include rectal bleeding, blood in the stool or black feaces, changes in bowel habits or not being able to control bowels, constipation, diarrhea, heartburn or acid reflux, or vomiting blood.
- **Signs of bladder problems:** include difficult or painful urination, frequent urination, loss of bladder control, blood in urine, waking frequently at night to urinate or wetting the bed at night, or leaking urine.
- **Signs of skin problems:** include changes in skin moles, frequent flushing and redness of face and neck, jaundice, skin lesions that don't go away or heal, new growths or moles on the skin, and thick, red skin with silvery patches.
- **Symptoms of muscle or joint problems**: include persistent muscle pains and body aches that are persistent, for example, numbness or tingling; pain, tenderness, stiffness, swelling, inflammation, or redness in or around joints; and decreased range of motion or loss of function of any joints or muscles.

- **Signs of emotional problems**: include anxiety, depression fatigue, feeling tense, flashbacks and nightmares, disinterest in regular activities, suicidal thoughts, hallucinations, or delusions.

So veterinary observe, record and report many cases at clinics of patients. Such observation, recorded and report may include:-

- ✓ Date
- ✓ ·History Of Patient ,Diagnosis ,Sex, Age, Species Breed of Animal and Brand (Tattoing)
- ✓ Sample Taken
- ✓ Tentative Diagnosis ·
- ✓ Treatment And Drug Administrated
- ✓ Diseases Suspected and Tests Requested
- ✓ Identity (If Available) of the Animals sampled
- ✓ The Vaccination Status of the Animals (If Known) and etc

1.6 Clinical sample collections and sample processing

1.6.1 Clinical Sample collection

Samples can be obtained by fine-needle aspiration or by scraping. Imprints (touch preparations) of external lesions can also be used, although these tend to have a greater degree of contamination. Aspirated material should always be smeared before air drying. The first step in obtaining any sample is familiarizing yourself with the requirements of the specific laboratory used for testing samples.

Collection container types and required sample volumes will vary from instrument to instrument, from laboratory to laboratory, and will differ with each testing procedure. Always check ahead with the laboratory to ensure that samples are collected in the correct type of collection containers and that at least minimum volumes are submitted for analysis. All samples must be labeled properly; they may be rejected by the laboratory if insufficiently labeled.

- **Labeling of specimens:**
  - ✓ Type specimen (e.g., Serum, whole blood, liver, brain, urine, etc.), whether preservative is used or not and type of preservative used.
  - ✓ An identification of animals (e.g., tag, name, colors of hair coat, etc.) ifspecimens were collected from more than one animal.
  - ✓ The names of the owner, if specimens from different cases are packed together in the same parcel.
  - ✓ Date of collection.

- **Handling and transport of specimens:**
  - ✓ The parcels should be securely packed in order to withstand rough handling and protect shipper and the environment
  - ✓ Great care should be taken to ensure that the containers with specimens do not leak! (a sticky tape may be used)
  - ✓ Use cotton wool, newspaper or other absorbent materials to soak up any leakage that, despite all the precautions, might occur.
  - ✓ Small cooler (Styrofoam) boxes are preferred for shipping refrigerated specimens.

1.6.2 Specimen type

Whole blood: When whole blood is required, a proper ratio of anticoagulant to blood is necessary to prevent over dilution of the sample or clotting if too much blood is added.

- Aseptically bleed directly in to vacutainers containing EDTA or heparin preservatives
- Mix gently by rolling the tube and
- Do not freeze but keep cool on ice.

Serum: Two main types of tubes are used for serum collection: **plain** and **serum separator tubes:**

- Use red topped vacutainer tubes for serology and mineral analysis
- After collecting the blood sample, the tube is left untouched at room temperature till clotting is complete
- The clot is then carefully removed and then Centrifuge or allow any remaining cells to settle
- Gently pour the clear serum into a fresh or sterile tubes or cryovials
- Care must be taken to keep the serum completely free from blood cells
- Keep refrigerated (or -20°C) if the serum stay longer at your laboratory/clinic before shipment

Other Fluids: For cytologic evaluation of other fluids (e.g., urine, cerebral spinal fluid, effusions, fine-needle aspirates, washes), submit fluid samples in for biochemical evaluation or bacterial culture.

Feces: Fresh fecal samples are required for parasite ova identification, microbial culture, and molecular diagnostics.

- Should be fresh and free of soil and vegetation
- Collect direct from rectum
- Lubricate your finger after wearing glove and rotate for easy entrance without damage the mucous membrane

Self-check 1	Written test

Name…… ID…… Date…….

Directions: Answer all the questions listed below

Test I. Much from B to A (One Points each)

	A	B
_____	1. surgical instrument	A. rope
_____	2. diagnostic instrument	B. Gloves
_____	3. Physical restraining	C. drug
_____	4. Equipment for treatment	D. microscope
_____	5. chemical restraining	E. scissor
_____	6. types of PPE	F. syringe

Test II. Short Answer Questions?

1. Define Restraining? (3 Points)
2. Define Diagnosis? (3 Points)
3. Mention all types of restraining methods? (4 Points)

Notice: Scoring rates greater than **16** point is satisfactory and less than **16** is not satisfactory

Operation Sheet -1

1.1. Procedure for conducting a history taking for sick animals

A. materials and equipment's

i. PPE
ii. Case book
iii. Case paper and pens**.**

B. Steps or procedures of History taking.

Step 1: Record Basic Information includes:

- Recording the name, age, breed, and sex of the animal.
- Record the owner's name and contact information.

Step 2: Determine the Chief Complaint

Step 3: Gather Information about Medical History

Step 4: Perform Additional Diagnostic Tests

1.2. Conduct heart rate of cattle:

A. Tool and Equipment

- PPE
- Stethoscope
- Weight scales

B. To take the heart rate of cattle, follow these steps:

i. Approach the animal slowly.
ii. Stand quietly by the left side of the animal near its shoulder.
iii. Place the palm of your hand over the animal's rib cage and feel for the heartbeat.
iv. Count the beats for 15 seconds, then multiply that number by four to get the heart rate in beats per minute (BPM).

Lap test-1	Performance Test

Name……ID……..Date……..

Time started: 2:00 Time finished: 3:30

Instructions 1: Given necessary templates, tools, PPE and materials you are required to perform the following tasks within 1:30 hour. The project expected from each student to do it.

Task 1: conduct history taking**?**

Task.2: Conduct heart rate of cattle?

LG #13	LO #2- Prepare and Provide basic treatment to clinical cases

Instruction sheet 2

This learning guide is developed to provide you the necessary information regarding the following content coverage and topics:

- Preparation of equipment and materials for treatment
- Applying treatments considering right dosage regime of drugs
- Recording and reporting of treatment information

This guide will also assist you to attain the learning outcomes stated in the cover page. Specifically, upon completion of this learning guide, you will be able to:

- Handle and restrain Animals safely without causing harm or injury to animal or handler.
- Take Source of information about past treatment from the case book.
- Prepare Equipment and materials and treatment site
- Determine and prepare drug type, route of administration and frequency of treatment
- Provide Animal treatments hygienically and consistently
- Identify treated animals from non-treated animals by recording the date

Learning Instructions:

1. Read the specific objectives of this Learning Guide.
2. Follow the instructions described below.
3. Read the information written in the information Sheets
4. Accomplish the Self-checks

Information sheet 2.

2.1 Preparation of equipment and materials for treatment

In using veterinary drugs, certain steps should be followed before deciding on the procedures to be carried out. Selection of treatment requires cost/benefit analysis particularly in food animals. Uneconomical treatment should be avoided unless the animals are genetically valuable deserving priority for conservation or have special aesthetic attachment with the owner (e.g. pets like dogs and cats). Apart from the cost of a particular drug, its efficacy and safety with minimal adverse effects and residues in food animals should be given due attention. A drug of choice depends on individual patient and disease condition; whenever written it should clearly indicate the species of animal, age and sometimes breed, the dose of the drug and the formulations available locally, frequency of use and the duration of treatment. In food animals, considerations must be given to the withdrawal period of drugs in case an emergency slaughter is recommended (included in prescription writing).

Having the correct tools and materials for veterinary procedures is crucial for the safety of both the animal and the veterinarian. Before preparing any equipment, it is crucial to know what procedure you will be performing. This gives a clear idea of the specific tools and materials required. Make sure you are familiar with the procedure and the equipment and materials needed to carry out the task.

- **Sterilize Equipment** - Tools such as scissors, scalpels, and clamps must be sterilized first before use. A simple way to sterilize these tools is to place them into a steam autoclave, which uses heated steam at high pressure to destroy microbes. This kills any bacteria that may cause infections in animals.
- **Prepare Other Materials** - Other materials are used in veterinary procedures such as cotton balls, gauze pads, bandages, surgical drapes, and sterile solutions. These require opening sterile packaging and arranging them ready to use when needed.
- **Organize Instruments** - All instruments should be arranged in their order of use before starting a procedure. Be sure to prepare all instruments needed for the procedure, so you don't have to leave the animal or procedure area during the operation.
- **Check Equipment** - Make sure that the medical equipment is working properly before starting your procedure. Do a quick check of your anesthesia machines, electrocardiogram (ECG) machines, oxygen tanks, and other medical supplies such as syringes and needles. Check if they are clean and sterilized or if they are near expiration.

By following these steps, you can prepare your materials and equipment effectively, ensuring a successful veterinary treatment procedure for your patient. It is essential to always prioritize your patient's safety and well-being by being proactive and thoroughly prepare the materials and equipment used during veterinary treatment-procedures.

2.2 Applying treatments considering right dosage regime of drugs

As there is great variation in body weight in different species of animals, setting a standard dose applicable to all is difficult. It is thus imperative that a veterinary professional with sufficient experience should be involved in prescription of drugs. On the other hand some drugs may be administered to certain species but not to others requiring good knowledge of adverse effects in particular species of animals. The type of feed is also another consideration. Drugs formulated as feed additives are preferred; but these drugs should only be given to certain species of animals or age groups if they don't adversely affect the microflora. The types of drugs used in veterinary medicine are chemically similar with those used in human medicine. However, certain conditions should be considered before deciding to use a certain drug. These include: whether treatment is economical, if there are regulatory and public health concerns, compatibility, stability and compounding process and pharmacokinetics of the active ingredient.

2.2.1 Dosage regime of a drug

The rational use of drugs in veterinary medicine has various significances, such as reducing the risk of drug resistance, increasing efficacy, reducing drug residue, and decreasing adverse drug reactions. To ensure the effectiveness and safety of veterinary treatment, it is important to consider the appropriate dosage regime of drugs.

The dosage regime of a drug: refers to the interval, quantity and duration at which it is administered to an animal. When determining the correct dosage regime of a drug, it is important to take into account the animal's age, weight, condition, and any pre-existing medical conditions. The veterinarian may also need to consider the pharmacokinetics of the drug, including its absorption, distribution, metabolism, and excretion in the animal's body. In addition to calculating the correct dosage, it is important to administer the drug correctly. This may involve administering the medication at specific times or with food, or administering the medication in a specific manner (for example, intravenously or orally). To ensure that the correct dosage regime of drugs is being administered, veterinarians may use a variety of techniques, including blood tests, diagnostic imaging, and close observation of an animal's symptoms and behaviour. It is also important to monitor an animal's response to treatment regularly and adjust the dosage regime as needed.

Dosage: is the amount of a medicine or drug that someone takes or should take, and how often they should take it.

Frequency of drug: The frequency with which the medication is to be administered. For example, some medications may be given only once a day, while others may be administered every 6 hours. Any other information that could vary, depending upon what drug the order is for.

2.2.2 Route of drug administration

Drugs are introduced into the body by several routes. They may be

- Taken by mouth (orally)
- Given by injection into a vein (intravenously, IV), into a muscle (intramuscularly, IM), into the space around the spinal cord (intrathecally), or beneath the skin (subcutaneously, sc)
- Placed under the tongue (sublingually) or between the gums and cheek (buccally)
- Inserted in the rectum (rectally) or vagina (vaginally)
- Placed in the eye (by the ocular route) or the ear (by the otic route)
- Sprayed into the nose and absorbed through the nasal membranes (nasally)
- Breathed into the lungs, usually through the mouth (by inhalation) or mouth and nose (by nebulization)
- Applied to the skin (cutaneously) for a local (topical) or bodywide (systemic) effect

2.3 Recording and reporting of treatment information

Individual animal medical records are required for all non-rodent mammal species, and must at least include an Arrival Status form that describes the condition and characteristics of each animal upon arrival. Veterinary staff must make entries in the animal's medical record, which at least document the following:

- The abnormal physical/physiological parameters observed.
- Description of specimens taken for diagnosis.
- The laboratory or diagnostic findings.
- The treatments initiated.

Animal care staffs are responsible for ensuring that all treatments, post-treatment follow-ups, and required observations prescribed by the veterinary staff are carried out as recorded on the Progress Notes Form until the concern is resolved. Veterinary staff must routinely review the Progress Notes Forms to ensure that the prescribed treatments and observations are being performed and recorded as ordered.

Self-check 2	Written test

Name…… ID…… Date…….

Directions: Answer all the questions listed below

Part I. Short Answer Questions

1. List route of administration of drugs? (5 Points)
2. What is dosage regime of a drug?(2 point)
3. What is dosage? (3 Points)

Notice: The scoring rates greater than **10** are satisfactory and less than 10 is not satisfactory.

LG #14	LO #3- Provide specific clinical care advice

Instruction sheet 3

This learning guide is developed to provide you the necessary information regarding the following content coverage and topics:

- Providing nutrition and reducing stress
- Primary clinical and non-clinical care
- Withdrawal period of drugs

This guide will also assist you to attain the learning outcomes stated in the cover page.

Specifically, upon completion of this learning guide, you will be able to:

- Provide primary clinical and non-clinical care advice
- Ensure Care advice on overall health of livestock

Learning Instructions:

1. Read the specific objectives of this Learning Guide.
2. Follow the instructions described below.
3. Read the information written in the information Sheets
4. Accomplish the Self-checks

Information sheet 3.

3.1 Providing nutrition and reducing stress

There are several measures needed to ensure feed safety and quality. These include:

- minimizing the presence of microbiological, chemical and physical hazards;
- Ensuring appropriate levels of available energy and nutrients to meet animal requirements; and physical characteristics such as particle size, pellet durability and hardness.

Risk management in relation to the safety of feed and feed ingredients is an essential part of good feed manufacturing practices. Animals that are under stress or diseased must have continuous access to water from a welfare and well-being point of view. Insufficient water intake can lead to further deterioration of health and may delay recovery after a challenge. Digestible carbohydrates in the form of starch and digestible sugars are quantitatively the most important energy source. Minerals are vital for many bodily functions, and in some challenge conditions or critical transition periods, mineral nutrition may require special attention. However, in contrast to other dietary measures, relatively little information is available on the impact on GIT health of providing levels of important macro-minerals such as calcium, phosphorus and sodium above nutritional requirements.

A wide range of feed additives are available to promote gastrointestinal health. The efficacy and consistency of many feed additives can vary and are affected by feed composition, animal health, farm management, and the physical and social environment. For farmers and feed manufacturers and integrators, it can be quite challenging to choose the most effective solutions.

3.2 Primary clinical and non-clinical care

A veterinarian shall provide competent veterinary medical clinical care under the terms of a veterinarian-client-patient relationship (VCPR), with compassion and respect for animal welfare and human health.

Provision of appropriate patient care, except in emergencies, be free to choose whom to serve, with whom to associate, and the environment in which to provide veterinary medical care. The examination of your patient, along with obtaining a complete history, combines into the single most important step in caring for our patients. We should provide advice on withdrawal period by consuming animals and animal products; humans are at risk of consuming whatever chemicals the animal had ingested or was exposed to. Such chemicals include veterinary drugs, insecticides or herbicides. The residue limits and the withdrawal periods of these chemicals and drugs have been established; though controversy still surrounds this issue.

3.3 Withdrawal period of drugs

Withdrawal period is the time between the application of the drug and clearance to a level of its residue limit. Thus, withdrawal period should be considered during treatment of food animals including livestock, honeybee and fish. For example, if mastitis is treated with a medicine that requires a withdrawal period of 6 days for milk, the treated cow's milk may be produced for delivery to a dairy on the 7th day after the last dose, at the earliest. The purpose of the withdrawal periods is to ensure that foods do not contain residues of pharmacologically active substances in excess of the maximum residue limit (MRL). To determine withdrawal periods, data on the drug metabolism in the animal is studied.

The results of residue studies on a veterinary medicinal product are then compared with the MRL. The withdrawal period is set so that it is long enough to ensure that medicinal residues in the animal's tissues are below the maximum limit. The withdrawal period is different for each veterinary medicinal product, animal species and food type, meaning there are different withdrawal periods for meat (slaughter), fish, eggs, milk and honey.

The use of drugs in food-producing animals has the potential to generate residues in meat, milk, eggs and honey and poses a health hazard to consumers. Factors that influence the occurrence of residues in foods of animal origin are: drug’s properties and their pharmacokinetic characteristics, physicochemical or biological processes of animals and their products. The most likely reason for drug residues in foods of animal origin are due to improper drug usage and failure to observe withdrawal period.

Self-check 3	Written test

Name…… ID…… Date…….

Directions: Answer all the questions listed below.

Test I: define the following (4 point)

1) Withdrawal period of drug?

Test II: Short Answer Questions (3 points each)

1. .How to reduce stress of animal.

Notice: The scoring rates greater than **7** are satisfactory and less than that is not satisfactory.

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