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MINISTRY OF LABOR AND SKILLS

ANIMAL HEALTH

Level – IV

Based on March, 2022 Version 4 Occupational Standard



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MINISTRY OF LABOR AND SKILLS

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Introduction to the Module

This Module covers the knowledge, skills and attitude required to Conduct general and confirmatory diagnosis as well as provide more advanced treatment to clinical cases of veterinary cases. It also comprises knowledge and skill to conduct post treatment advice to the owner of animals.

LG #9	LO #1- Conduct general and confirmatory diagnosis of veterinary cases

Instruction sheet 1

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

- Reception duties
- General and systemic clinical examination
- Establish disease diagnosis

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:

- Perform reception duties to owner and information history of the case to admit the patient animal
- perform Distant examination of the animal to identify abnormal animal behaviour, gait abnormality, feeding and watering of the patient animal.
- Conducte Stepwise and detailed cranio-caudal close physical examination of the animal to identify signs of illness or injury.
- given Tentative decision on the cause of the problem based on the information in the clinical examination.
- Collecte and examine Sample specimen when confirmation is required.
- Define definitive decision on the cause of the disease

Learning Instructions:

1. Read the specific objectives of this Learning Guide.
2. Follow the instructions described below and try to understand what are being discussed.
3. Ask your teacher for assistance if you have hard time understanding them.
4. Read the information written in the information Sheets
5. Accomplish the Self-checks.
6. Perform Operation Sheets
7. Do the “LAP test”

Information Sheet 1

Introduction

A veterinary clinical examination is a systematic and comprehensive evaluation of an animal's overall health and well-being performed by a veterinarian or veterinary professional. It involves a series of steps and procedures to assess the animal's physical condition, detect any abnormalities or signs of illness, and gather information necessary for diagnosis and treatment. The word diagnosis is derived from the Greek words *dia* which means "by", and *gnosis* which means "knowledge". The verb is *diagnosed* and a person diagnosing could be considered a *diagnostician.* Diagnosis or diagnostics is the process of identifying a veterinary medical condition or disease by its signs, symptoms, and from the results of various diagnostic procedures and also is "the recognition of a disease or condition by its outward signs and symptoms". The conclusion reached through this process is called *a diagnosis*. The term "diagnostic criteria" designates the combination of symptoms which allows the doctor to ascertain the diagnosis of the respective disease.

1.1. Reception duties

A veterinary receptionist is an individual who works in a veterinary clinic or hospital with basic knowledge of veterinary and front desk activities such as answering calls, welcoming clients, and taking mails. The job requires being comfortable in the presence of animals because you will be dealing with them on a daily basis. The job description of the receptionist who works in a veterinary hospital involves providing accurate information to inquiries from clients and other members of the public. Therefore, to succeed on this job, the receptionist must make it a priority to learn about all his/her clinic’s procedures. For the fact that the role involves a lot of physical contact with people, the receptionist has to be neatly and smartly dressed at all times; and must also wear a warm smile when greeting and welcoming clients to the clinic. Receptionists can have a great deal of influence on their companies’ clients because they are usually the first people clients come in contact with when they visit the clinics.

1.1.1 Duties of veterinarian recetioniest

As a receptionist at an animal clinic or veterinary hospital, your duties would generally include welcoming and assisting pet owners, managing appointments, and maintaining records. Here's a breakdown of your responsibilities:

- **Greeting and Registration:**
  - ✓ Welcome the owner/patient and make them feel comfortable.
  - ✓ Obtain the owner's name, contact information, and any relevant identification details.
  - ✓ Record the patient's name, species, breed, age, sex, and any distinguishing features.
  - ✓ Ask for the reason for the visit, such as routine check-up, illness, or injury.
- **Medical History:**
  - ✓ Request the animal's medical history from the owner, including previous illnesses, surgeries, vaccinations, and medications.
  - ✓ Ask about any known allergies or adverse reactions to medications.
  - ✓ Inquire about the animal's current diet and exercise routine.
  - ✓ Record the information accurately in the patient's file or electronic medical record (EMR) system.
- **Consent and Permissions:**
  - ✓ Explain any necessary procedures or treatments and obtain the owner's consent.
  - ✓ Discuss potential risks, benefits, and estimated costs.
  - ✓ Inform the owner about any additional tests or diagnostics that may be required.
- **Administrative Tasks:**
  - ✓ Collect and process any required paperwork, such as consent forms or legal documents.
  - ✓ Verify and update the owner's contact and billing information.
  - ✓ Schedule appointments, if necessary, for follow-up visits or procedures.
- **Facility Orientation:**
  - ✓ Provide a brief tour of the facility, including waiting areas, examination rooms, and any specialized areas like surgery or radiology.
  - ✓ Inform the owner about facility policies, visiting hours, and emergency procedures.
- **Communication and Follow-Up**

- ✓ Provide information on medication administration, dietary restrictions, or any necessary lifestyle changes.
- ✓ Act as a liaison between pet owners and veterinary staff, relaying messages, answering phone calls, and responding to emails or inquiries.
- ✓ Communicate important information to the appropriate veterinary professionals, such as urgent cases or special requests from owners.
- ✓ Follow up with owners regarding test results, medication instructions, or post-treatment care
- ✓ Schedule any required follow-up appointments or provide contact information for further assistance.

- **Client Education:**
  - ✓ Provide basic information to pet owners regarding preventive care, nutrition, grooming, and general pet wellness.
  - ✓ Offer educational resources or recommend additional services when appropriate, such as obedience training or specialized treatments.

1.1.2 Ethical considerations for receptionists in veterinary practice

As a receptionist in a veterinary clinic, you play a vital role in maintaining ethical standards and providing excellent care to both animals and their owners. Here are some key ethical considerations for receptionists in veterinary practice:

- **Confidentiality**: Respect the confidentiality of client information. Ensure that you do not discuss any client's personal or medical information with unauthorized individuals or disclose it inappropriately.
- **Professionalism**: Maintain a professional and courteous demeanor when interacting with clients, colleagues, and other staff members. Treat everyone with respect and empathy, regardless of the situation.
- **Communication**: Practice clear and effective communication with clients, ensuring they understand the available treatment options, associated costs, and expected outcomes. Be honest and transparent in your interactions, providing accurate information to the best of your knowledge.
- **Informed Consent**: Obtain informed consent from clients before proceeding with any treatments, surgeries, or procedures. Clearly explain the risks, benefits, and potential

complications involved, enabling clients to make well-informed decisions about their pets' care.

- **Animal Welfare**: Prioritize the well-being of the animals in your care. Ensure that they are handled gently and with compassion. Report any signs of neglect or abuse to the appropriate
- **Teamwork:** Collaborate effectively with veterinarians, veterinary technicians, and other staff members to ensure coordinated and cohesive care for the animals. Foster a positive and supportive work environment.
- **Personal Boundaries**: Maintain appropriate personal boundaries with clients, avoiding any form of personal or romantic relationships that may compromise professional ethics.

1.1.3 valuable skills of veterinary receptionist

Being a veterinary receptionist requires a combination of strong interpersonal skills, organizational abilities, and knowledge of veterinary practices. Here are some special skills that can be valuable for a veterinary receptionist:

- **Excellent Communication:** As a veterinary receptionist, you'll be interacting with clients, veterinary staff, and potentially distressed pet owners. Clear and effective communication, both verbal and written, is crucial for conveying information, answering inquiries, and demonstrating empathy.
- **Compassion and Empathy**: Dealing with pet owners requires compassion and empathy, especially during challenging situations such as emergencies or difficult diagnoses. Show understanding, listen attentively, and offer support to pet owners who may be worried or upset.
- **Veterinary Knowledge**: While you don't need to have veterinary qualifications, having a basic understanding of common pet ailments, vaccination schedules, and preventive care can be beneficial. This knowledge will help you provide accurate information and assist clients with routine inquiries.
- **Organization and Multitasking**: Veterinary receptionists often handle multiple tasks simultaneously, including scheduling appointments, managing paperwork, answering phone calls, and greeting clients. Strong organizational and multitasking skills are vital to ensure smooth operations and avoid confusion or errors.

- **Computer Proficiency:** Proficiency in using veterinary software systems, scheduling software, and general office applications is essential. Familiarize yourself with common software used in veterinary clinics to efficiently manage appointments, maintain client records, and process payments.
- **Problem Solving**: Veterinary receptionists encounter various challenges and unexpected situations. The ability to think critically, remain calm under pressure, and find solutions to problems is valuable. You should be resourceful, adaptable, and able to make sound decisions independently when necessary.
- **Professionalism:** Maintain a professional demeanor and appearance at all times. Treat clients and colleagues with respect, adhere to confidentiality protocols, and demonstrate a positive attitude. Professionalism helps build trust and fosters a welcoming environment for clients.
- **Customer Service Skills**: Veterinary receptionists are often the first point of contact for clients. Strong customer service skills, such as active listening, patience, and a friendly attitude, will contribute to positive client experiences and client retention.
- **Attention to Detail**: Accuracy is crucial when recording client and patient information, scheduling appointments, and handling financial transactions. Paying close attention to detail helps prevent errors and ensures that information is correctly documented.
- **Stress Management**: Veterinary clinics can be fast-paced and emotionally charged environments. Developing effective stress management techniques, such as deep breathing, time management, or seeking support from colleagues, will help you maintain composure during busy or stressful periods.

1.2 General and systemic clinical examination

Clinical examination of animals is an important component of veterinary medicine and involves assessing the overall health and physical condition of an animal. It is typically conducted by a veterinarian or trained veterinary technician. 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. Here are some key steps involved in the clinical examination of animals:

1.2.1. General clinical examination

A general clinical examination of animals involves a systematic evaluation of the animal's overall health and physical condition. It is typically performed by a veterinarian or a trained veterinary professional. 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.

A. Routine approaches for General clinical examination:

The preliminary general inspection which is performed prior to handling or restraining the animal should never be omitted. It should be under taken during the period devoted to obtain the history of the case. It provides an opportunity to observe behavioral actions which are likely to obscure when

the animal is restrained for closer clinical inspection. The following routines should be considered during general clinical examination include:

- Distinguishing marks
- Physical condition of the animal
- Behavior (Demeanor)
- Posture of the animal
- Gait
- Vital sign

- **Distinguishing marks**: The distinguishing features of the animals should carefully be noted at the beginning of the examination in order to establish its identity for future reference. Distinguishing features of the animal includes the name and address of the owner, spp and breed, sex, age, weight, color of the animal, horned or not, brand, tattoo, tag number, etc. Identification of distinguishing marks has mportance of
  - ✓ to differentiate, recognize or to avoid confusion between examined and none examined animal.
  - ✓ for legal purpose (public health importance of rabies)
  - ✓ for epidemiological purpose
    - 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.

- **Physical condition**: is the general external appearance of the patient from clinical aspects. It is assessed by inspection and palpation of certain parts/prominences of the body (ribs, spine, shoulder, pelvic, roots of the tail). It is influenced by feeding management and care, health and disease. 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.

- **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. Performing a distant examination of an animal can provide valuable insights into its overall health and well-being. While it may not replace a hands-on examination by a veterinarian, it can still help identify certain aspects of abnormal animal behavior, gait abnormalities, and issues related to feeding and watering. Here are some guidelines for conducting a distant examination: Abnormal animal behavior refers to any deviations from the typical or expected behavior patterns exhibited by an animal. It can be an indication of underlying health issues, psychological distress, environmental factors, or a combination of these factors. Here are some examples of abnormal animal behavior:
  - ✓ **Aggression**: Sudden or excessive aggression towards humans or other animals can be a sign of pain, fear, territoriality, or behavioral problems.
  - ✓ **Lethargy**: Unusual or prolonged periods of inactivity, lack of interest in surroundings, or decreased responsiveness can indicate illness, injury, or depression.
  - ✓ **Anxiety** and Fear: Excessive trembling, panting, pacing, hiding, or avoidance behaviors may suggest anxiety, fear, or phobias.
  - ✓ **Repetitive Behaviors**: Engaging in repetitive actions such as pacing, circling, tail chasing, or self-mutilation can be signs of anxiety, compulsive disorders, or sensory abnormalities.
  - ✓ **Changes in Eating or Drinking Patterns**: Significant changes in appetite, such as sudden weight loss or gain, refusal to eat, or excessive thirst, may indicate underlying health issues or dental problems.
  - ✓ **Vocalizations**: Unusual or excessive vocalizations, such as constant barking, howling, or meowing, may signify pain, distress, or cognitive dysfunction.

- ✓ **Abnormal Elimination**: Frequent urination, difficulty urinating or defecating, inappropriate elimination, or changes in urine or fecal appearance can indicate urinary tract problems, gastrointestinal issues, or stress.
- ✓ **Self-Isolation or Social Withdrawal:** A sudden change in social behavior, such as avoiding social interactions, hiding, or withdrawing from usual activities, may suggest illness, pain, or emotional distress.
- ✓ **Stereotypic Behaviors:** Repetitive, purposeless behaviors like head bobbing, weaving, or swaying, often seen in captive animals, can be signs of stress, boredom, or inadequate environmental stimulation.
- ✓ **Disorientation or Confusion:** Signs of disorientation, confusion, or altered awareness can be indicative of neurological disorders, cognitive dysfunction, or intoxication

- **Posture of the animal :** 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...
- **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.
- **Vital signs** : In clinical examination of animals, vital signs are important indicators of an animal's overall health and physiological status. Monitoring vital signs allows veterinarians to assess the animal's well-being, detect abnormalities, and make informed decisions regarding

treatment. The primary vital signs assessed during a clinical examination of animals typically include:

- ✓ **Body Temperature:** Measurement of body temperature helps assess the animal's metabolic rate and detect signs of fever or hypothermia. The normal body temperature range varies between species. For example, in dogs, the normal temperature ranges from 100.5°F to 102.5°F (38.0°C to 39.2°C).
- ✓ **Heart Rate**: The heart rate indicates the number of times the heart beats per minute (bpm) and provides information about cardiac function and circulation. Heart rate can be measured by palpating the pulse in peripheral arteries or by using a stethoscope to listen to the heartbeat. The normal heart rate varies depending on the species, breed, and size of the animal.
- ✓ **Respiratory Rate:** Respiratory rate refers to the number of breaths an animal takes per minute. It helps evaluate the animal's respiratory function and oxygenation. Respiratory rate can be assessed by observing the rise and fall of the chest or by listening to the breath sounds. The normal respiratory rate varies among species and can be influenced by factors such as age and size.
- ✓ **Capillary Refill Time: Capillary refill time (CRT)** is a measure of peripheral circulation. It is assessed by applying pressure to the animal's gums and observing how quickly the color returns after releasing the pressure. A normal CRT is usually less than 2 seconds in most animals.

- **Examination of mucus membranes**: Evaluation of the color of the mucous membranes, such as the gums and inner eyelids, provides valuable information about the animal's circulatory status and oxygenation. In healthy animals, the mucus of muzzle, nostrils, oral cavity, conjunctiva, vestibulum of vagina and prepuce are naturally moist, shiny, smooth and pale pink in color. Here are some abnormal mucous membrane colors and their potential significance:

- ✓ Pale or White: Pale or white mucous membranes can suggest anemia, internal bleeding, shock, or poor circulation. It may also indicate a decrease in red blood cell count, such as in cases of blood loss or certain systemic diseases.
- ✓ Blue or Cyanotic: Bluish or cyanotic mucous membranes can indicate a lack of oxygen in the blood, known as cyanosis. This condition can be caused by respiratory distress, heart failure, or other circulatory problems.

- ✓ Yellow: Yellowish mucous membranes, known as jaundice, can be a sign of liver disease or dysfunction. It occurs due to an accumulation of bilirubin, a yellow pigment, in the body.
- ✓ Brick Red or Dark Red: Dark red or brick red mucous membranes may indicate heat stroke, significant dehydration, or a condition called septicemia, which is a severe bloodstream infection.
- ✓ Bright Red: Bright red mucous membranes can be a sign of inflammation or increased blood flow to a particular area. It may be observed in cases of infection, allergic reactions, or certain toxicities.
- ✓ Petechiae or Ecchymoses: The presence of small red or purple spots (petechiae) or larger bruises (ecchymoses) on the mucous membranes can suggest bleeding disorders, trauma, or clotting abnormalities

B. Techniques of General clinical examination

- **Inspection:** involves close visualization of the organ or part in question which involves injuries, any change in size and anatomy, discharges, lacrymation, appearance, behavior, posture.
- **Palpation:** is application of pressure on the tissue or organ by fingers and/or probe to detect the presence of abnormality. Palpation mainly detects the presence of pain in tissues by noting an increase in sensitivity. Other abnormalities that can be detected by palpation are variation in size, shape, consistency and temperature. Two way of palpation: Direct & Indirect
  - ✓ **Direct palpation:** is handling or palpating the tissue by means of fingers
  - ✓ **Indirect palpation*:*** is palpation by using probe (using any material)

Conditions that can be identified by palpation

- **Resilient:** when a structure quickly resumes its normal shape after the application of pressure has ceased.
- **Hard consistency:** when the structure possess bone-like consistency
- **Dough:** when pressure palpation causes pitting which persists for some time (this is mainly a characteristics of edema)
- **Firm**: when resistance to pressure is similar to that of normal liver (no pitting formation)
- **Emphysematous:** when the pressure cripitation (crackling) sound. E.g. as in case of black leg.

- **Fluctuating**- when a wave-like movement is produced in a structure by application of alternating pressu

- **Percussion:** is a physical method of examination which involves striking on part of the body for obtaining information about the condition of the deeper lying tissue on the audible sound it produces. It is mainly used for the examination of the thorax (lung and heart, some times for para-nasal sinuses and subcutaneous emphysema).

✓ **Types of percussion**

- Hammer-pleximeter percussion: hammer & pleximeter are required and it is used in large animals.
- Finger-finger percussion: is used in small animals and in man. It is performed by using both hands and the middle finger of one hand acting as a pleximeter and the flexed middle finger of the other hand as a hammer.

NB: The diagnostic value percussion in large animal is limited because the internal organs are too large and the over lined tissue (muscle and fat deposition) in many cases they are too thick to recognize the extent of the abnormality. In pigs, finger-finger percussion is very difficult because of the fat beneath the skin.

❖ **Quality of the sounds produced by the percussion are classified as**

- **Resonan**t = a characteristic sound emitted by air containing organs (mainly by a normal lung).
- This sound is simulated with the drum sound (is sound of normal lung).
- **Tympanic** sound = a characteristic sound produced by striking of hollow organs containing gas under pressure. E.g. tympanic rumen or caecum
- **Dull sound** = sound produced by striking of solid organs such as heart, liver

- **Auscultation:** listening the sound produced by the functional activity of an organ located with in a particular part of the body. It is mainly used for the examination of lungs, trachea, heart, rumen, reticulum and caecum. It is performed either by direct or indirect method.

  The indirect method employs the stethoscope while the direct method is performed by placing the ear in contact with the body surface over the organ to be examined. The indirect method is more preferable, and with adequate experience give reliable information (result) and the direct method is using the hand and then hear the sound.



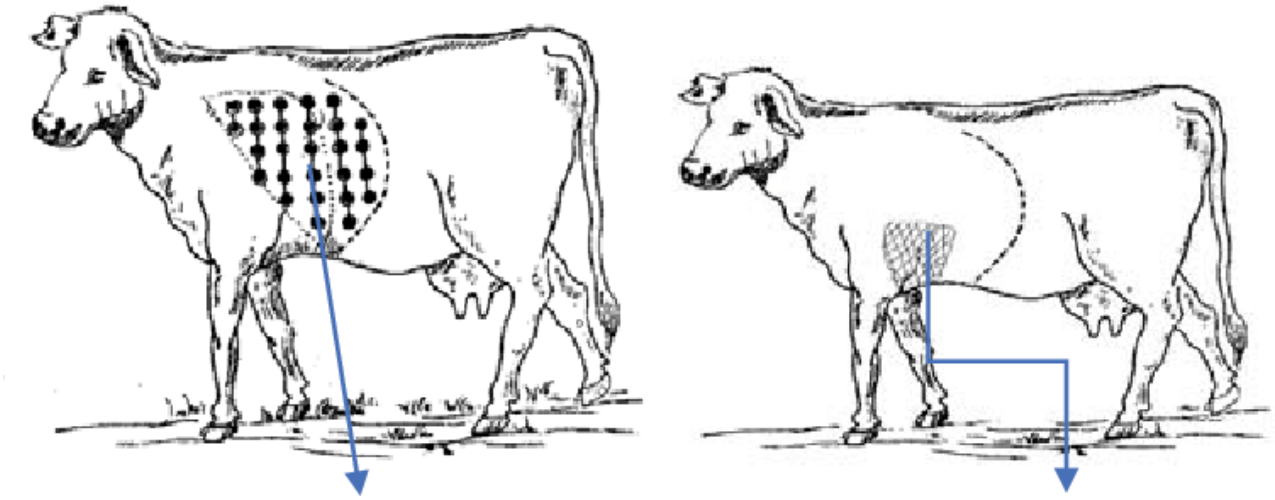


figure 1.1 Area for lungs auscultation Area for heart auscultation.

- ✓ **Disadvantage of using direct auscultation**
  - Difficulty in maintaining close contact in less rest animals
  - The production of fractional sounds which a rise from opposing movement b/n the clinician and the hair coat (i.e. difficulty in excluding extraneous sounds).
  - The skin may harbor ectoparasites, bacteria and fungi that are potentially pathogenic to human and the skin coat may be dirty.

1.2.2. Systemic/specific/regional/ examination

Systemic clinical examination of animals involves a thorough evaluation of various body systems to assess their overall health. 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. 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 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. Here's a general framework for conducting a systemic clinical examination:

A. Examination of the integument system

The skin provides protection against minor physical injuries supports hair growth and offers some defense against microbial invasion. The condition of the skin is a reflection of the general health of the animal, deteriorating in cases of ill health, ill thrift and debility. In some conditions, such as jaundice, the skin may provide through discoloration direct diagnostic evidence of a specific disease process. In other conditions, such as parasitism or severe mineral deficiency, a nonspecific general deterioration of skin health may occur causing a greater number of hairs than normal to enter the telogen or resting phase and a delay in their replacement, leaving the coat in poor condition with little hair. Sebaceous secretions may be reduced, allowing the skinto become abnormally dry and inflexible and less able to perform its.

The perspective point to assessing the condition of skin and coat to identify clinicalsigns of skin lesions such as:

- Condition of the coat
- Elasticity of the coat
- Pruritus
- Primary and secondary skin lesions
- Dermatitis
- Hyperkeratosis or parakeratosis
- Presence of ectoparasites.

Discoloration of the skin may arise due to anaemia, cyanosis, jaundice, hyperaemia. In febrile conditions hair may be erect and in all chronic diseases with disturbances in nutrition, hair become rough, lusterless dry and coarse. Alopecia (Loss of hair) may occur due to diseases like ring worm, scabies, eczema, Iodine and Vit. A deficiency.



Figure 1.2 skin lesions

- **Common Signs of illness or injury**

When animals are affected by skin diseases or injuries, they may exhibit various signs and symptoms. Here are some common signs of illness or injury related to skin diseases in animals:

- ✓ Hair Loss: Partial or complete loss of hair in localized or widespread areas of the body can be indicative of a skin condition or underlying health issue.
- ✓ Redness and Inflammation: Skin that appears red, swollen, or inflamed may indicate an infection, allergic reaction, or irritation.
- ✓ Lesions and Sores: Open wounds, ulcers, blisters, scabs, or crusts on the skin can be signs of injury, infection, or skin disorders.
- ✓ Itching and Scratching: Animals with skin problems often exhibit excessive scratching, biting, licking, or rubbing against surfaces in an attempt to alleviate itching or discomfort.
- ✓ Discharge or Oozing: Skin conditions may result in the presence of abnormal discharge or oozing, such as pus, blood, or clear fluid.

- ✓ Thickened or Roughened Skin: Skin that appears thickened, rough, or calloused may be an indication of chronic irritation, dermatitis, or abnormal skin cell proliferation.
- ✓ Foul Odor: Certain skin infections or wounds can produce a noticeable unpleasant smell.
- ✓ Changes in Pigmentation: Alterations in skin color or pigmentation, such as darkening or lightening of the skin, may be observed in some skin conditions.
- ✓ Swelling: Skin diseases or injuries can cause localized or generalized swelling, which may be accompanied by pain or tenderness.
- ✓ Behavioral Changes: Animals experiencing discomfort or pain from skin issues may exhibit changes in behavior, such as restlessness, irritability, or reduced activity

B. Clinical Examination of the Digestive System

- **Assessment of appetite**

Appetite is a desire for feeding. It is a reflex condition by past experience of palatable food. It is not dependent on hunger. It is controlled by appetite center in the hypothalamus.

- ✓ Possible abnormalities of appetite
  - I. Decreased appetite (In appetence)
  - Increased appetite
  - II. Complete loss of appetite (Anorexia)
  - Abnormal appetite
- ✓ Classification of abnormal appetite
  - **Infantophagia**: eating youngs, this is observed in bitch, saw
  - **Osteophagia**: eating/chewing bones, this is observed in bovines due to P- deficiency
  - **Coprophagia**: eating faeces, observed in foals, swine. It has an advantage in swine in that the nutrients that were going to be lost with faeces are reutilized.
  - **Alltriophagia**: eating soil, observed in bovine and equine spp. Spore forming micro-organisms are found in the soil, ex Anthrax, Botulinum.
  - **Cannibalism**: eating one another, observed in poultry farms and also in humans.
  - **Licking coat**: observed in most animal species and is due to salt deficiency, i.e. when animals are sweating.

- **Examination of the oral cavity and associated organs**.

- ✓ **Inspection of the muzzle** : The muzzle refers to the front part of an animal's face, including the nose and mouth region. inspection of the muzzle of animals is of clinical importance for several reasons.
  - Dry muzzle due to febrile condition
  - Severe dermatitis
  - Sloughing and gangrene formation
  - Development of fissures
- ✓ **Examination of the teeth:** Abnormal teeth problems in animals can encompass a wide range of conditions and abnormalities that affect the structure, function, or appearance of their teeth. Here are some examples of abnormal teeth problems in animals:
  - **Malocclusion:** Malocclusion refers to misalignment of the teeth, where the upper and lower teeth do not meet properly when the animal's mouth is closed. This can lead to difficulty in chewing, pain, and oral health issues.
  - **Dental Trauma**: Animals may experience dental trauma due to accidents, fights, or other injuries. Fractured or broken teeth can occur, leading to pain, infection, and difficulty eating.
  - **Tooth Decay:** Tooth decay, also known as dental caries, can affect animals just as it does humans. It occurs when bacteria in the mouth produce acids that erode the tooth enamel, resulting in cavities. Poor oral hygiene and a diet high in sugars or carbohydrates can contribute to tooth decay in animals.
  - **Periodontal Disease:** Periodontal disease is a common problem in animals and occurs when plaque and tartar build-up on the teeth, leading to inflammation and infection of the gums. If left untreated, periodontal disease can cause tooth loss and affect the animal's overall health.
  - **Abscesses:** Dental abscesses can develop when bacteria infect the roots of teeth, leading to a painful accumulation of pus. Abscesses may cause swelling, pain, and difficulty eating.
  - **Enamel Hypoplasia:** Enamel hypoplasia is a condition where the enamel, the outer layer of the tooth, is underdeveloped or defective. It can result from nutritional deficiencies, certain diseases, or other factors. Enamel hypoplasia makes the affected teeth more susceptible to damage and decay.

- **Extra Teeth or Missing Teeth**: Some animals may have additional teeth (supernumerary teeth) or missing teeth due to genetic factors or developmental abnormalities. Extra teeth can cause overcrowding and misalignment, while missing teeth can affect chewing and lead to oral health issues

✓ **Examination of the esophagus:** The examination of the esophagus in animals is of significant importance for several reasons. The esophagus is a vital organ responsible for transporting food and liquids from the mouth to the stomach. Understanding its structure, function, and potential abnormalities through examination can provide valuable insights into an animal's health and aid in diagnosing various conditions. Here are some key points highlighting the importance of esophageal examination in animals:

- **Diagnosis of Esophageal Disorders**: Esophageal disorders such as esophagitis, esophageal strictures, esophageal foreign bodies, tumors, and megaesophagus (enlarged esophagus) can significantly impact an animal's well-being. By examining the esophagus, veterinarians can identify and diagnose these conditions, allowing for appropriate treatment and management.
- **Evaluation of Swallowing Difficulties**: Animals experiencing difficulties in swallowing, also known as dysphagia, may have underlying esophageal problems. Examination of the esophagus can help identify the cause of dysphagia, such as obstructions, inflammation, or motility disorders, and guide the development of a suitable treatment plan.
- **Foreign Body Detection**: Animals, especially curious and scavenging species, are prone to ingesting foreign objects that can become lodged in the esophagus. These objects can cause obstruction, inflammation, and even perforation, leading to severe complications. Examination techniques such as endoscopy or radiography can help locate and remove these foreign bodies before they cause further harm.
- **Monitoring Esophageal Function**: The examination of the esophagus allows for the assessment of its motility and contractility. Disorders that affect esophageal muscle function, such as megaesophagus or achalasia (a condition characterized by impaired esophageal peristalsis), can be identified through these evaluations. Understanding esophageal function is crucial for managing feeding strategies and preventing complications associated with impaired swallowing.

- **Screening for Esophageal Tumors:** Esophageal cancer can occur in animals, although it is relatively rare. By performing esophageal examinations, veterinarians can detect any suspicious growths or tumors, enabling early diagnosis and intervention. Early detection is essential for improving treatment outcomes and overall prognosis.
- **Preoperative Assessment**: Esophageal examination is often conducted as part of preoperative evaluations in animals requiring surgery involving the esophagus or nearby

- **Examination of the abdomen:** Clinical examination of the abdomen in animals is of great importance for several reasons. It allows veterinarians to assess the overall health status of the animal, identify potential abnormalities or diseases, and guide further diagnostic and treatment decisions. It has different techniques: -
  - ✓ External examination - inspection, palpation, percussion, auscultation
  - ✓ Internal examination - rectal palpation, exploratory puncture, rumenotomy, laparatomy, rumenocentesis (rumen puncture), caecocentesis (caecum puncture).
- **Examination of the stomach:**: Clinical examination of the stomach allows veterinarians to assess the health and function of the organ. It helps in diagnosing various gastrointestinal disorders such as gastric ulcers, gastritis, gastric dilation and volvulus (GDV), gastric tumors, and foreign body ingestion.
- **Examination of the rumen:** the rumen is examined by inspection of the left flank, palpation through the abdominal wall (in the left flank), palpation through the rectum, by auscultation, percussion and by examination of the rumenal fluid. Inspection on the left flank is performed when there is distension and motility of the rumen. Palpation through the abdominal wall is used to feel the consistency of the rumen content and the rumen motility. There are some diseases which reduce the rumen motility such as carbohydrate engorgement, indigestion and impaction. Rectal palpation gives better result than palpation through the abdominal wall. This is because the entire dorsal part is accessible similarly up on raising the abdominal floor; the posterior and the ventral parts are accessible. Percussion produces pain reaction (due to ruminitis) and the normal sound of the rumen is tympanic sound. Examination of rumenal fluid is essential to clinically examine the rumen. Rumenal fluid is collected by aspiration and examined for its physical, chemical and microbiological characteristics (to visualize the normal

flora and fauna of the rumen; i.e. bacteria and protozoan population). Auscultation indicates the functional activity of the rumen (to check whether there is motility or not).

The examination of the rumen is typically carried out by a veterinarian or a trained professional and involves several steps:

- ✓ **Auscultation**: The veterinarian will use a stethoscope to listen to the rumen sounds. Normal rumen contractions produce a characteristic "bubbling" or "gurgling" sound, indicating proper motility and fermentation. Abnormal or absent rumen sounds may suggest conditions such as rumen stasis or impaction.
- ✓ **Rumenocentesis**: In some cases, the veterinarian may perform rumenocentesis, which involves inserting a needle into the rumen to collect a sample of rumen fluid. The fluid can be analyzed for various parameters, including pH, microbial composition, volatile fatty acids, and the presence of harmful substances or toxins.
- ✓ **Rumenocopy**: Rumenocopy is a technique that allows direct visualization of the rumen lining using a specialized endoscope. The endoscope is inserted through the esophagus into the rumen, providing a detailed examination of the rumen wall for any abnormalities, such as ulcers, foreign bodies, or tumors.
- ✓ **Laboratory Tests:** Additional laboratory tests may be performed on rumen fluid or blood samples to assess the animal's overall health status and to detect any underlying infections, nutritional imbalances, or metabolic disorders

- **Examination of the reticulum:** the most commonly occurring disease is Traumatic Reticulo Peritonitis and/or Pericarditis (TRP). This is common in animals closer to factory or towns and is also common in feedlots (fattening farms). There are tests which aid to diagnose TRP.

  ✓ **Pole test**

  Method = having a 1-1.5 meter long and thickness of an arm is placed under the animal at the sternal area and held at each ends by two assistants/persons and then it is lifted upward and allowed to fall suddenly.

  - Result =
    - -ve pole test => the animal resumes its normal position very soon and there is no grunting sound.
    - +ve pole test => the animal holds its back and belly arched for some times and emitting a grunting sound.

- ✓ **Back grip test**

  Method = a fold of skin of the area over wither (in hump less breeds) and immediately caudal to the hump (in zebu breeds) is pulled up.

  - Result =
    - ➢ +ve => the animal catches its breath and grunts and it depresses its back and belly unwillingly or not at all.
    - ➢ = -ve => depresses its back and belly without any discomfort and no grants.

- ✓ **Slope test**

  Method = moving the animal up and down on a slopy/inclined plane. Cattle with painful condition of the reticulum emit a grunt even when standing. In mountain areas (sloppy areas) this grunt is exacerbated (aggravated).

  - Result = if the animal is unwilling to move up the sloppy/inclined plane/concert, the pain is due to TR Peritonitis. If the animal is unwilling to move down the slope, the pain is due to TR Pericarditis.

- ✓ **Pain percussion:** if there is a pain in the reticulum, the elasticity of the abdominal muscles at the site is lost.
- ✓ **Ferro scopy:** involves the application of a metal detector to detect the presence of magnetic substances. The metal detector is applied externally at the anatomy of the reticulum. Positive result is indicated by production of sound and/or discoloration.

- **Examination of the character of faeces**

This gives information mainly on the abnormalities of the intestines and we have to look for the following characteristics of faeces: -

- ✓ **Frequency of defecation**:
  - Frequent defecation and large amount of feces is an indication of enteritis, hyper motility of the intestine, irritant feed, excitement, Cu deficiency (molybdosis)
  - Reduced defecation/hard faeces/ is an indication of hypo motility, constipation and debility/ weakness
  - Complete absence of defecation is sign of intestinal obstruction.
- ✓ Odour of feces:
  - Unpleasant smell of faeces is an indication of presence of infection (bacterial)/enteritis

- ✓ Consistency of feces The consistency of feces in animals can provide valuable indications during a clinical examination. Here are some common observations and their potential implications:
  - Normal Consistency: Firm, well-formed feces are generally indicative of a healthy digestive system and proper nutrient absorption. This consistency is often seen in animals on a balanced diet with adequate fiber content.
  - Soft or Loose Stool: Soft or loose stool can be a sign of dietary changes, mild digestive upset, or dietary intolerance. It may also be associated with stress, viral or bacterial infections, parasitic infestations, certain medications, or dietary indiscretion. Additional diagnostic tests may be needed to determine the underlying cause.
  - Diarrhea: Diarrhea refers to the passage of watery or unformed feces. It can be acute or chronic and may be accompanied by other symptoms such as increased frequency of defecation, straining, mucus or blood in the stool, and abdominal discomfort. Diarrhea can be caused by various factors, including infections (viral, bacterial, or parasitic), dietary changes, food intolerances, inflammatory bowel disease, gastrointestinal disorders, medications, and systemic illnesses. Prompt veterinary attention is necessary if diarrhea persists or is accompanied by other concerning signs.
- ✓ Content of the feces: Abnormalities in the content of feces can indicate various underlying health conditions. Here are some examples of abnormal fecal content and their possible causes:
  - Blood in the stool (hematochezia): Blood in the stool can be a sign of gastrointestinal bleeding. It can be caused by conditions such as hemorrhoids, anal fissures, inflammatory bowel disease (e.g., Crohn's disease, ulcerative colitis), diverticulosis, colorectal polyps, or colorectal cancer.
  - Black, tarry stools (melena): Melena typically indicates bleeding in the upper gastrointestinal tract, such as the stomach or small intestine. It can be caused by conditions like peptic ulcers, gastritis, esophageal varices, or stomach cancer.
  - Greasy or fatty stools: Steatorrhea refers to the presence of excessive fat in the stool, making it oily, greasy, and foul-smelling. It can occur due to malabsorption

disorders like celiac disease, pancreatic insufficiency (e.g., pancreatitis, cystic fibrosis), or bile acid malabsorption.

- Pale or clay-colored stools: Pale or clay-colored stools may indicate a lack of bile pigments. This can occur due to various conditions, including bile duct obstruction (e.g., gallstones, tumors), liver diseases (e.g., hepatitis, cirrhosis), or certain medications.
- Mucus in the stool: Small amounts of mucus in the stool are normal, but an excessive presence may indicate inflammation or irritation within the gastrointestinal tract. Inflammatory bowel diseases (e.g., Crohn's disease, ulcerative colitis), infections, or food intolerances can cause increased mucus production.

✓ Colour of the feces :The abnormal color of feces in animals can vary depending on the species and underlying causes. Here are a few examples:

- Red or blood-tinged feces: Blood in the feces can indicate a variety of conditions, including gastrointestinal bleeding, parasites, or infections. It is important to consult a veterinarian for a proper diagnosis.
- Green feces: Green-colored feces in animals can be caused by dietary factors, such as consuming grass or green-colored foods. However, it can also be a sign of digestive disturbances or certain infections.
- Yellow or pale feces: Pale or yellowish feces can be a sign of liver or gallbladder issues in animals. It may indicate insufficient bile production or a blockage in the bile ducts.
- Black or tarry feces: Black or tarry feces in animals can suggest the presence of digested blood, similar to humans. It may be a sign of gastrointestinal bleeding, ulcers, or ingestion of certain substances.
- Orange or greasy feces: Feces with an orange or greasy appearance can indicate malabsorption issues, particularly involving fat. Conditions like pancreatic insufficiency or certain gastrointestinal disorders can cause such changes

✓ Quantity of the feces: Abnormal quantities of feces in animals can vary depending on the species, individual factors, diet, and health conditions. While it's difficult to provide specific information without more details, I can give you a general overview.

- Increased Quantity:

- Overeating or excessive food intake can result in larger amounts of feces being produced.
- High-fiber diets or diets rich in indigestible material can also lead to larger fecal volumes.
- Certain medical conditions such as malabsorption syndromes or gastrointestinal disorders may cause increased fecal output.

Decreased Quantity:

- Reduced food intake or fasting can result in decreased fecal output.
- Low-fiber diets or diets with poor nutritional content can lead to smaller fecal volumes.
- Dehydration or inadequate water intake can also result in decreased fecal output.
- Medical conditions such as constipation or gastrointestinal obstructions can cause decreased fecal production.

- **Common symptoms and lesion on clinical examination of the digestive system of animals**

✓ When conducting a clinical examination of the digestive system in animals, there are several common symptoms and lesions that may be observed. Here are some examples:

✓ Abdominal pain: Animals may show signs of discomfort or exhibit behaviors such as restlessness, vocalization, or reluctance to move.

✓ Vomiting: The presence of regurgitated or expelled stomach contents may indicate underlying digestive system issues.

✓ Diarrhea: Loose or watery feces can be a symptom of gastrointestinal disturbances, infections, or dietary issues.

✓ Constipation: Infrequent or difficult passage of feces may suggest obstruction or motility problems within the digestive tract.

✓ Abdominal distention: Swelling or bloating of the abdomen can occur due to excess gas accumulation, fluid retention, or organ enlargement.

✓ Weight loss: Unexplained or progressive weight loss can be indicative of various gastrointestinal disorders that affect nutrient absorption or metabolism.

- ✓ Poor appetite: Reduced or absent desire to eat may signal gastrointestinal discomfort or underlying systemic diseases.
- ✓ Hematemesis: The presence of blood in vomit may indicate bleeding within the gastrointestinal tract.
- ✓ Melena: Dark, tarry stools that result from the presence of digested blood can be a sign of upper gastrointestinal bleeding.
- ✓ Jaundice: Yellow discoloration of mucous membranes, skin, and sclera due to liver or biliary system dysfunction may be observed.
- ✓ Lesions: During a clinical examination, lesions may be identified in the digestive system, such as ulcers, masses, polyps, or abnormal tissue growths. These lesions can provide clues about the underlying condition.

- **Diagnostic methods for common symptoms and lesion on clinical examination of the digestive system of animals**

When it comes to diagnosing common symptoms and lesions in the digestive system of animals, several diagnostic methods can be employed. These methods include:

- ✓ Clinical Examination: A thorough clinical examination of the animal is essential to assess general health, observe symptoms, and identify lesions. This examination involves evaluating vital signs, palpating the abdomen, listening to gut sounds, and observing external signs such as weight loss, diarrhea, vomiting, or abnormal feces.
- ✓ History and Signalment: Obtaining a detailed history of the animal's diet, vaccination status, previous medical conditions, and any recent changes in behavior or environment can provide valuable clues. Signalment, which includes the age, breed, and sex of the animal, may also aid in narrowing down potential diagnoses.
- ✓ Laboratory Tests: Various laboratory tests can aid in diagnosing digestive system disorders. These may include:
- ✓ Complete Blood Count (CBC): Provides information about red and white blood cells, which can indicate infections, anemia, or inflammation.
- ✓ Biochemical Profile: Evaluates organ function, including liver and kidney health, and assesses electrolyte levels.

- ✓ Fecal Examination: Detects parasites, such as worms or protozoa, that may cause gastrointestinal symptoms.
- ✓ Fecal Culture: Identifies bacterial or fungal infections in the gastrointestinal tract.
- ✓ Fecal Occult Blood Test (FOBT): Detects hidden blood in the feces, which may indicate bleeding in the digestive system.
- ✓ Pancreatic Enzyme Assays: Measures pancreatic enzyme levels to diagnose pancreatic insufficiency.
- ✓ Imaging Techniques: Various imaging techniques help visualize the digestive system and identify abnormalities. These may include:
- ✓ Radiography (X-rays): Useful for identifying foreign bodies, obstructions, or changes in the size and shape of organs.
- ✓ Ultrasonography: Provides detailed images of organs, helping to detect masses, cysts, or fluid accumulation.
- ✓ Endoscopy: Involves inserting a flexible tube with a camera into the digestive tract to visualize the esophagus, stomach, and intestines. Biopsies can also be taken during this procedure.
- ✓ Biopsy and Histopathology: If a lesion or abnormality is identified, a biopsy may be performed to collect a small tissue sample. The sample is then sent to a laboratory for histopathological examination, where it is analyzed under a microscope to identify specific diseases or conditions.
- ✓ Exploratory Surgery: In some cases, when other diagnostic methods fail to provide a definitive diagnosis, exploratory surgery may be necessary. During surgery, the veterinarian visually inspects the organs, collects samples for biopsy, and may perform necessary treatments simultaneously.

C. Clinical examination of the musculoskeletal system

When performing a clinical examination of the musculoskeletal system in animals, it is important to assess for any abnormalities or signs of injury or disease.

Possible abnormalities:

- ✓ The animal may lie down flat on its side with fully extended hind and fore limbs. This is due to painful condition of the legs.
- ✓ Frog posture: one or both hind legs are extended forward and it is caused by the rupture of adductor muscle or hip dislocation.
- ✓ Opisthotonus → elevation of the head and neck
- ✓ Empristhotonus → lowering of head and neck
- ✓ Torticolis → lateral twisting of the head and neck
- ✓ Lotosis → down ward curvature of the trunk
- ✓ Kyphosis → up ward curvature of the trunk
- ✓ Scoliosis → lateral curvature of the body
- ✓ Adduction → when the two legs are found closed to each other
- ✓ Abduction → widening apart of the limbs

D. Clinical examination of the urinary system

- **Assessment of features associated with urination**

- ✓ **Posture during urination**: every species of animal has its own characteristic posture during urination. E.g. male dog raises and abducts one of its hind limbs against a selected object and then discharge its urine. Adoption of uncharacteristic posture during urination should be considered as an indication of abnormality in the urinary tract.
- ✓ **Frequency of urination**: in normal animal the frequency of urination depends on the quantity of water taken, water produced by metabolic process and the amount of water lost by perspiration (sweating) and defecation.
  - Normal frequency: in shoats = 1-3 times per day; In bovine and equine = 5-6 times per day
  - Abnormal frequency =
    - ➢ Anuria: absence of urine production or an extremely low urine output.
    - ➢ pollakiuria: frequent urination with/without increasing the volume of urine
    - ➢ Polyuria: frequent urination with increased volume of urine
    - ➢ Oligouria: decrease in the frequency of urination and volume of urine

- **Examination of urine**

✓ **Physical examination:**

- Colour of the urine: normal colour is slightly yellowish and common and abnormal discoloration is red urine. Differentiation of the different causes of clour change of urine to red urine is via the following procedure."
- Viscosity
  - normal urine-viscosity in horse = viscous and whitish due to bicarbonates mucus and watery in other species.
  - Abnormal= increased urine viscosity due to inflammation, presence of glucose or protein in the urine
- Odour:
  - normal odour = smells like volatile organic fatty acids
  - Abnormal odour = pungent (due to infection in the urinary tract)
- Specific gravity:
  - normal = similar to the s.g. of water.
  - Increased s.g. is due to inflammation, presence of glucose and/or proteins in urine possibly due to damage to the glomerular filteration membrane.
- Conten of urine:
  - Hematuria: This refers to the presence of blood in the urine. It can be caused by various factors such as urinary tract infections, bladder stones, trauma, tumors, or urinary system inflammation. Hematuria may be visible to the naked eye or detected through microscopic examination of the urine.
  - Proteinuria: The presence of excessive protein in the urine can be indicative of kidney disease or damage to the filtering units of the kidneys (glomeruli). Proteinuria can be a sign of various conditions, including infection, inflammation, or kidney dysfunction.
  - Crystalluria: The presence of crystals in the urine may indicate an increased risk of urinary stone formation. Different types of crystals can form depending on the underlying cause, such as calcium oxalate crystals, struvite crystals, or urate crystals.
  - Polyuria/Polydipsia: Increased urine production (polyuria) and increased thirst (polydipsia) can be signs of conditions such as diabetes mellitus, kidney disease, or hormonal imbalances.

- Azotemia: Elevated levels of nitrogenous waste products (such as urea and creatinine) in the blood can suggest impaired kidney function. Azotemia can occur due to acute or chronic kidney disease.
- Hydronephrosis: This condition involves the dilation of the renal pelvis and calyces due to obstruction of urine flow. It can result from conditions such as urinary stones, tumors, or congenital abnormalities.
- Urinary Incontinence: Involuntary leakage of urine can be caused by various factors, including urinary tract infections, bladder muscle weakness, neurological disorders, or anatomical abnormalities.

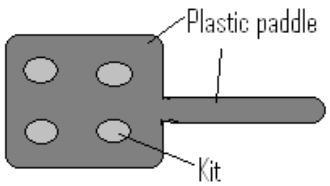
E. Clinical Examination of the Reproductive System

during a clinical examination of the reproductive system in animals, there are several abnormal findings that a veterinarian or animal healthcare professional may encounter.

- ✓ Rectal palpation = we can detect pyometra, pregnancy, ovarian cyst, luteal cyst, metritis (for endometrium swelling) by palpation in large animals (cows and mares).
- ✓ External palpation = is for small animals and small ruminants and we can detect for pregnancy, pyometra and metritis but not for the cyst.
- ✓ Tumors: Abnormal growths or tumors can be found in the reproductive organs of animals. These may be benign or malignant and can affect both males and females.
- ✓ Infections: Infections of the reproductive system can occur due to bacterial, viral, or fungal pathogens. Common examples include pyometra(infection of the uterus) and orchitis (infection of the testicles).
- ✓ Congenital abnormalities: Animals may be born with reproductive system abnormalities, such as cryptorchidism(undescended testicles) in male animals or vaginal strictures in females.
- ✓ Uterine prolapse: This occurs when the uterus protrudes through the cervix and into the vaginal canal. It is commonly seen in large animals like cows and horses during or after parturition.
- ✓ Testicular abnormalities: Male animals may have abnormalities of the testicles, such as testicular torsion (twisting of the testicle), testicular hypoplasia (underdevelopment), or testicular neoplasia (tumors).

- ✓ Vaginal or penile discharge: Abnormal discharge from the vagina or penis can be indicative of infection, inflammation, or other underlying conditions.
- ✓ Infertility: Animals may exhibit reproductive system abnormalities that lead to infertility, such as hormonal imbalances, structural abnormalities, or genetic disorders.
- ✓ Prostate problems: In male animals, the prostate gland can become enlarged or develop tumors, leading to urinary and reproductive system issues.
- ✓ Scrotal or vulvar dermatitis: Skin conditions affecting the scrotum or vulva can occur, leading to irritation, redness, swelling, and discomfort.
- ✓ Mammary gland abnormalities: Female animals may develop mammary tumors or experience inflammation of the mammary glands (mastitis).Examination of individual mammary gland and each quarter of the udder and teat must be performed for diagnosis of mastitis and other abnormalities. This is because of the economic importance and public health implications. The supra mammary lymph node should be examined and this can be performed by palpation.

- ***Techniques for diagnosis of mastitis: -***
  - Inspection: we have to see for the swelling of the mammary gland which may be due to acute mastitis, mammary edema during pregnancy, reduction in the size of the mammary gland after lactation or if there is chronic mastitis, vesicular lesions (as in case of FMD), ulceration, tick infestation.
  - Palpation: for temperature change, udder consistency, pain, neoplasm (tumor), nodular lesion.
  - Physical examination of the milk: we can detect discoloration, blood tinged, watery consistency (in chronic form of mastitis), clots and flakes.
  - **California mastitis test (CMT**): is used for examination of sub-clinical mastitis. CMT kit contains 4 kits of the plastic paddle.



    - ❖ High gel formation is indication of degree of infection of the udder.
  - **bacteriological procedures**: -After CMT we proceed to

    Culturing of milk→ isolation of the micro-organism using different characteristics; colony characteristics, presence of media, gram rxn and using

different biochemical tests→ drug sensitivity for effective treatment. The treatment can be local intra-mammary infusion for which is not acute and systemic infection. Example: Escherchia coli (E.coli) are systemic infection and treated by parenteral antibiotic injections.

F. Clinical examination of the nervous system

There are different approaches: -

A) Assessment of the manner of response of the animal to external stimuli

B) Assessment of reflex arcs

C) Examination of Cerebro-Spinal-Fluid (CSF)

D) Examination of posture and gait (musculoskeletal system)

A) Assessment of the manner of response of the animal to external stimuli

- **Normal response** is a response exhibited by the animal such as: -
  - ✓ Elevation of head and ear
  - ✓ Turning towards the source of the stimuli
  - ✓ Directing attention to the source of the stimuli
  - ✓ Running away from the source of the stimuli
  - ✓ Showing the signs of attack in some cases
- **Abnormal responses**

✓ Decreased response to stimuli has three categories

- Dull state: the animal reacts to external stimuli slowly

  Causes: mild septicemia, mild toxemia, uremia, mild stage of hypoglycemia
- Dummy state: is advanced degree of failure to respond to external stimuli

  Causes: hepatic fibrosis, encephalomyelitis, listeriosis, ketosis, lead poisoning
- Comma state:
  - ➢ The animals do not react to external stimuli at all.
  - ➢ This can be demonstrated by absence of blinking when the cornea is touched.
  - ➢ It is the only autonomic nervous system which continues to function.
  - ➢ Loss of conscious is gradual (not sudden). Then fainting (sudden loss of consciousness) will result.

✓ Increased response to external stimuli

✓ Mild anxious: is slight increase in responding to stimuli.

- Signs: becoming alert every time, exhibit normal movement
- Causes: slightly constant pain, early stage of hypocalcaemia, vision defects

✓ Mania: is moderate increase in responding to external stimuli

- Signs: rigorous licking specific part of the body, pressing objects forward with its head, compulsive movement in a circular manner, licking or chewing inanimate objects
- Causes: ketosis, meningitis

✓ Frenzy: is the most advanced degree of increased response to external stimuli.

- Signs: the animal action is uncontrolled; the animal is danger to any one approaching it.
- Causes: Rabies, ketosis, lead (Pb) poisoning

B) Assessment of reflex arcs

The functional activity of the nervous system is largely assessed by determining the integrity of the reflex arcs. Reflex arcs are involuntary activities that are induced in muscle or gland in response to stimuli. The most important reflex arcs that are used for assessing the functional activity of the nervous system are: -

- **Corneal reflex**: If we stimulate or touch the cornea with moistened swab, the normal response will be blinking of the cornea. But in case of abnormality of the nervous system there will not be blinking of the corneal structure. Corneal reflex is the most commonly used method of functional assessment of the nervous system.
- **Pupillar reflex**: shading of both eyes for some time and then exposing to a beam of light rays (stimulus) to one of them. The response will be dilation of the pupil in the dark and rapid constriction up on exposure to bright light.
- **Cutaneous reflex**: the stimulus is touching or slightly pricking (pinch) the skin in certain parts of the body. The response will be either prompting to withdraw the pricking object, contraction of the site or turning towards the stimulus.
- **Patellar reflex**: stimulus is tapping (beating) of the patellar ligament and the response will be immediate contraction of the quadriceps femories muscle leading to forward extension of the limb.

C) Examination of the cerebrospinal fluid (CSF)

a) Macroscopic/gross CSF examination:

- Colour
  - ✓ Normal colour: clear or colorless or looks distilled water
  - ✓ Bright red colour: indicates presence of fresh blood due to puncture
  - ✓ Red brown colour: is indication of intracranial hemorrhage
  - ✓ Yellowish colour: is indication of bilirubin in the CSF
  - ✓ Gray/green colour: is indication of inflammatory/supportive conditions/ infectious agents (bacteria, fungus)
- Turbidity: higher turbidity is due to the presence of cells in CSF and the causes of such higher turbidity include acute bacterial meningitis or due to hemorrhage.
- Coagulation: normal CSF doesn't coagulate but coagulation indicates increased protein level in the CSF due to presence of infection in the CNS.
- Specific gravity (sg): normal sg is similar with that of water and increased sg indicates infection and hemorrhage.

b) Examination for micro-organisms in CSF: by direct smear of the CSF sediments or by culturing and then isolation of the infectious agent and then after do drug sensitivity test and finally provide the appropriate treatment against the infection.

G. The respiratory system

The respiratory system can be examined by visualization, palpation, percussion and auscultation.

The respiratory rate can be determined by;

- ✓ Observing the movement of the nostril
- ✓ Observing The movement of the thraco-abdominal cavity
- ✓ Auscultation on the right part of the thorax or trachea

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.

Terms

- **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.

✓ **Types of dyspnoea**

- **Inspiratory dyspnoea** - it is a feature of all those diseases in which entry of air into the lungs or transfer of oxygen to the blood or tissues is inhibited, e.g. in stenosis of air passages, there is dilation of the nostrils, extension of the head and neck and opening of the mouth, costal type or respiration, depression of the intercostals spaces, forward movement of the body during each inspiration.
- **Expiratory dyspnoea** - it occurs when the escape of air from the lungs is impeded, e.g. in pulmonary emphysema and pleural adhesions. The clinical signs of this form of dysponea are: development of a groove in the anterior part of the flank, protracted expiration, doubles expiratory lift involving the abdominal muscles, pumping of the anus.
- **Indeterminate dyspnoea** - it is the commonest type. It is seen to occur in pneumonia, bronchitis, cardiac diseases such as failure of the left ventricle, severe anemia, and acidosis diseases in which there is a fairly severe disturbance of tissue respiration (hypoxia) or difficulty in both inspiration and expiration.

Abnormal Respiration Noises (stridosis)

- **Hiccup (singultus) -** is a short, jerky inspiration, caused by stimulation of the phrenic nerve producing sudden contration of the diaphragm.
- **Wheezing or blowing** - stenosis of upper air passages, more pronounced on inspiration.
- **Snoring** - due to fluttering of the soft palate in open mouth breathing, from various interference of air flow through the upper respiratory tract (as nasal granuloma, tumours of the pharynx, abcesses, etc).
- **Sneezing** - an explosive expiration through the nose due to irritated nasal mucous membrane.
- **Rattling** - accumulation of exudates in the upper air passages, fluttering or related vocal cords on inspiration, etc.

- **Stenotic laryngeal sound** - due to narrowing or occlusion of the glottis, as in laryngeal hemiplegia (roaring) in horses, also necrotic laryngitis (calf diphtheria), actinobacillosis, oedema of the glottis, neoplasm and equine strangles.

H. Heart and circulatory system Examination

the examination of the heart and circulatory system in animals involves assessing the overall health and function of these vital systems. Here are some key aspects of a heart and circulatory system examination in animals:

- Physical Examination: The veterinarian will perform a thorough physical examination of the animal, including listening to the heart sounds with a stethoscope. Abnormal heart sounds, such as murmurs or irregular rhythms, may indicate underlying heart problems.
- Pulse Assessment: The pulse rate and quality will be evaluated. A weak or irregular pulse may suggest circulatory issues.
- Blood Pressure Measurement: In some cases, blood pressure may be measured using a Doppler device or an oscillometric method. This helps assess the strength and efficiency of blood flow through the arteries.
- Palpation of Peripheral Arteries: The veterinarian may palpate peripheral arteries, such as the femoral artery, to check for abnormalities, such as weak or absent pulses.
- Capillary Refill Time: The capillary refill time is assessed by pressing on the animal's gums or other mucous membranes and observing how quickly the color returns after pressure is released. Prolonged refill time may indicate poor circulation.
- Diagnostic Tests: Depending on the animal's condition and the veterinarian's findings, further diagnostic tests may be recommended. These can include blood tests, electrocardiography (ECG), echocardiography (ultrasound of the heart), chest X-rays, or Doppler ultrasound to evaluate blood flow.
- Doppler Blood Flow Evaluation: Doppler ultrasound can be used to assess blood flow through the heart and major blood vessels. It can help identify abnormalities such as stenosis (narrowing) or regurgitation (backflow) of blood valves.
- Echocardiography: Echocardiography is a non-invasive ultrasound imaging technique used to evaluate the structure and function of the heart. It provides information about heart size, chamber dimensions, valve function, and blood flow patterns.

- Electrocardiography (ECG): An electrocardiogram measures the electrical activity of the heart. It can help identify abnormalities in the heart's rhythm (arrhythmias) and detect evidence of heart enlargement or damage.
- Chest X-rays: X-rays can provide information about the size and shape of the heart, the presence of fluid in the lungs, and other signs of heart disease.
- Blood Tests: Blood tests may include a complete blood count (CBC), biochemistry panel, and specific cardiac markers to evaluate overall health and identify any underlying conditions or imbalances.
- **Inspection** - chest vibration due to hypertrophy or lateral displacement of heart;
  Brisket edema and jugular pulsation due to cardiac insufficiency may be noted.
- **Palpation** - the following can be noted
  - ✓ Cardiac apex beat (5th intercostals space),
  - ✓ Cardiac thrill in pericardial friction,
  - ✓ Pain reactions in pericarditis, pleuritis.
- **Percussion** - absolute cardiac dullness sound is produced. Increased or decreased areas of cardiac dullness, tympanic sound and pain reaction may be detected.
  Percussion area - In equine it is done on the 3-5 intercostal spaces on the left side; and 4-5 intercostal space on the right. In ruminants it is done on the 4-5 intercostal space on the left side; and cannot be examined on the right.
- **Auscultation** - is the best method to assess the functional status of the heart. It is used to detect abnormal heart sounds, heart rate, rhythm and character (intensity).

Heart sounds

- Normal heart sounds
  - ✓ Systolic sound- is dull, long and deep sound that produced by the closing of mitral and tricuspid valves it gives “LUB” sound.
  - ✓ Diastolic sound- is short and sharper sound that produced when pulmonary and aortic valves shut and giving “DUP”sounds.
- Abnormal heart sound/murmur
- **Cardiac murmur** is caused by stenosis or incomplete closure of the valves and they may replace or accompany normal sounds. In stenosis the murmur is harsh and whirring whereas in incomplete closure it is softer and hissing in tone.

- Pericardial frictional sounds are produced when the pericardium is dry and rough due to diseases, e.g. Traumatic Reticulo Pericarditis.
- Abnormal variation in heart rate
    - ✓ Tachycardia (increased rate)
    - ✓ Sinus or simple tachycardia occurs in pain, hyperthermia, excitement, or adrenergic drugs.
    - ✓ Paroxysmal tachycardia is sudden periods of tachycardia of short duration.
    - ✓ It is an indication of myocardial disease.
    - ✓ Bradycardia (decreased rate)
    - ✓ Sinus or simple bradycardia occurs in hypertension, parturient hypocalcemia, coma, TRP, diaphragmatic hernia.
    - ✓ It also occurs in athletic animals.

1.3. Establish disease diagnosis

Diagnosis is a process of establishing the nature (peracute, acute, sub acute, and chronic) and the etiology of a disease, i.e. diagnosis is performed by Using clinical signs, Using laboratory examination and Identification of the nature of diseases and their etiologies.

- **Importance of Diagnosis**
    - ✓ To recommend specific treatment
    - ✓ To provide an accurate prognosis
    - ✓ For research propose (Example to identify disease in certain area)
    - ✓ To reduce public health hazard
- **Types of Diagnosis**
    - ✓ **Snap Diagnosis:** This to give an opinion about the cause of the disease by (merely (only) looking the animal. It is often erroneous unless the animal showing pathgnomic signs
    - ✓ **Tentative Diagnosis**: This is to give suspected cause of disease based on history and initial clinical examination
    - ✓ **Symptomatic Diagnosis**: It is a Diagnosis based on few important symptoms without knowing the case of disease

- ✓ **Definitive diagnosis**: It is based on clinical, Physical and laboratory findings. -It includes the exact cause of disease
- ✓ **Therapeutic Diagnosis:** It is diagnosis of disease based on the response of the animal to particular drug. Example: - cowdriosis response for ox tetracycline given IV
- ✓ **Differential Diagnosis**: This is the process exclusion for differentiating among disease having similar symptoms or closely related disease Example Dermatophyosis Demodicosis skin lesion Anthrax Vs Black leg--- cause sudden death

- **Components of Establishing a diagnosis**

Establishing a diagnosis for animal diseases generally involves a combination of clinical examination, laboratory tests, and sometimes imaging or other diagnostic procedures. Here are some steps that are commonly followed in the process of diagnosing animal diseases:

- ✓ Clinical Examination: A veterinarian will perform a thorough physical examination of the animal, looking for any visible signs or symptoms that may indicate a particular disease. They will collect information about the animal's medical history, behavior, diet, and environment.
- ✓ History: Providing the veterinarian with detailed information about the animal's medical history, including any previous illnesses, vaccinations, medications, and changes in behavior or appetite, can help in the diagnostic process.
- ✓ Diagnostic Tests: Depending on the suspected disease, the veterinarian may recommend various diagnostic tests. These may include blood tests, urine or fecal analysis, swabs or cultures, serological tests, imaging (such as X-rays or ultrasounds), or biopsies. These tests help identify the presence of pathogens, measure specific parameters, or detect abnormalities within the animal's body.
- ✓ Referral: In some cases, the veterinarian may refer the animal to a specialized veterinary clinic or laboratory for further testing or consultations with veterinary specialists.
- ✓ Observation: Sometimes, if the initial diagnostic tests do not provide a clear diagnosis, the veterinarian may recommend observation or monitoring of the animal's condition over a period of time. This can help in identifying patterns or changes that may aid in the diagnosis.
- ✓ Consultation: Veterinary professionals may consult with other specialists or refer to published literature or databases to gather more information and insights for complex cases or rare diseases

I. Tentative diagnosis descion

In veterinary medicine, a tentative decision on the cause of a problem in animals is also commonly made based on the information obtained during the clinical examination. Based on the information obtained from the examination, the veterinarian will use their professional expertise and knowledge to form a preliminary diagnosis or a list of potential differential diagnoses. This tentative decision is based on the clinical findings and the veterinarian's experience in evaluating similar cases. However, it's important to note that the tentative decision made during the clinical examination of animals is not always definitive. Animals cannot communicate their symptoms directly, and diagnostic tests are often necessary to confirm or further investigate the suspected cause. These tests may include blood work, imaging studies (such as X-rays or ultrasound), microbiological cultures, or biopsies.

II. Definitive diagnosis descion

In some cases, a diagnosis may be achieved based on the clinical examination alone if the signs and symptoms are highly specific and characteristic of a particular condition. However, this is relatively rare, and in most cases, further diagnostic tests are required to confirm or rule out potential causes definitively.When confirmation is required for animal diagnosis, various sample specimens may be collected and examined depending on the suspected condition or disease. Here are some common examples:

- Blood Samples: Blood samples are frequently collected for diagnostic purposes in animals. They can provide valuable information about the animal's overall health, organ function, and presence of infectious agents. Blood tests may include a complete blood count (CBC), blood chemistry panel, serological tests for specific antibodies or antigens, and DNA or RNA tests for genetic disorders.
- Tissue Biopsies: When there is a suspicion of tumors, abnormal growths, or certain diseases affecting specific organs, a tissue biopsy may be performed. During a biopsy, a small piece of the affected tissue is collected and examined under a microscope. This allows for a detailed analysis of the cellular structure, identification of abnormalities, and determination of the underlying cause.

- Swabs and Secretions: Swabs of various types can be used to collect samples from affected areas or body fluids. For example, nasal swabs, throat swabs, or eye swabs may be taken to diagnose respiratory or ocular infections. Swabs can also be used to collect samples from skin lesions, ear canals, or genital areas. These samples can be analyzed for the presence of bacteria, viruses, fungi, or parasites.
- Fecal Samples: Fecal samples are commonly collected to diagnose gastrointestinal disorders or parasitic infections in animals. The presence of parasites, such as worms or protozoa, can be detected through microscopic examination or specialized tests. Fecal samples can also be analyzed for the presence of abnormal bacteria or signs of digestive malabsorption.
- Urine Samples: Urine samples may be collected to evaluate kidney function, diagnose urinary tract infections, or screen for metabolic disorders. Tests can include urinalysis, urine culture, and measurement of specific substances or metabolites.
- Fluid Aspirates: In cases of fluid accumulation in body cavities, such as pleural or abdominal effusions, the fluid can be aspirated and examined. Analysis of the fluid composition, cell types, and presence of infectious agents can help in diagnosing conditions like infections, cancers, or inflammatory diseases.

- **Perform definetive diagnosis for faciolosis in animals by using Fecal Examination**

Fecal Examination: Microscopic examination of fecal samples can be performed to detect the presence of Fasciola eggs. However, it is important to note that eggs may not be consistently shed in the feces, especially during early infection stages. By perming Fecal Sedimentation Technique . Look for Fasciola eggs, which are oval-shaped with a distinctive operculum (a lid-like structure) and by using Fecal Flotation Technique Carefully remove the coverslip and place it on a microscope slide for examination under a microscope,Look for Fasciola eggs.

Self-check 1	

Name…… ID…… Date…….

Directions: Answer the following questions below.

Part I: Choose the best answer among the given alternatives (1pts each)

1. Which of the following is an essential skill for a veterinary receptionist?
   a) Basic understanding of veterinary procedures
   b) Advanced surgical techniques
   c) Proficiency in laboratory diagnostics
   d) Experience in animal training
2. What is an important ethical consideration for receptionists in veterinary practice?
   a) Upselling additional services to clients
   b) Sharing confidential client information with unauthorized individuals
   c) Accepting gifts from clients
   d) Engaging in personal relationships with clients
3. What is one of the primary responsibilities of a veterinary receptionist?
   a) Performing surgical procedures
   b) Administering vaccinations to animals
   c) Greeting and assisting pet owners
   d) Conducting laboratory tests
4. Which skill is valuable for a veterinary receptionist to effectively manage a busy schedule?
   a) Compassion and empathy
   b) Strong organizational and multitasking skills
   c) Advanced knowledge of animal behavior
   d) Proficiency in surgical techniques
5. What is an example of a short-term stress management technique for a veterinary receptionist?
   a) Regular exercise routine
   b) Taking extended breaks during work hours
   c) Engaging in mindfulness meditation
   d) Relying on alcohol or substance use

6. which technique allows direct visualization of the rumen lining?

a) Auscultation
c) Rumenocopy
b) Rumenocentesis
d) Laboratory tests

7. The pole test is used to diagnose:

a) Gastric ulcers
c) Traumatic Reticulo Peritonitis
b) Rumen stasis
d) Tooth decay

8.What is the main purpose of examining the esophagus in animals?

a) Assessing the health of the stomach
b) Diagnosing dental trauma
c) Identifying swallowing difficulties
d) Monitoring rumen function

9. Abnormalities in the character of feces can indicate:

a) Enteritis
c) Enamel hypoplasia
b) Tooth decay
d) Dermatitis

Part II: Short Answer Questions(2pts each):

1. Describe an example of how a veterinary receptionist can demonstrate excellent customer service skills.
2. Explain the importance of maintaining confidentiality in a veterinary clinic as a receptionist.
3. Provide an example of how a veterinary receptionist can contribute to the well-being of animals in the clinic.
4. What are the possible causes of dental trauma in animals?
5. Describe the technique of rumenocentesis and its significance in diagnosing rumen disorders.
6. How can the character of feces provide information about the health of the intestines?

Note: **Satisfactory rating - 20 points** **Unsatisfactory - below 20 points**

Operation sheet 1

1.1 Perform definetive diagnosis for faciolosis in animals by using Fecal Examination

A. Materials: (gloves, sample collection containers: universal bottle, gloves, disposable plastic, 10% formalin or sodium acetate-acetic acid-formalin (saf) solution, microscope, microscope slides and cover slips, sodium nitrate, zinc sulfate, or saturated sugar solutions,centrifuge (optional) iodine or carbol-fuchsin,methyl blue, universal bottle, ice box)

B. Procedure:

I. Use appropriate PPE
II. Conduct general clinical examination
III. Conduct systemic clinical examination
IV. Fecal sample collection by following appropriate procedure
V. Conduct either sedimentation or Fecal Flotation Technique(see the lab procedures for this)
VI. Examine a small amount of the sediment under a microscope using a suitable magnification.
VII. Look for Fasciola eggs, which are oval-shaped with a distinctive operculum (a lid-like structure).

1.2. Perform definetive diagnosis for trypanosomosis in animals by using thin smear

A. Materials (Microscope slides, Cover slips, Lancet or needle, Alcohol swabs, Microscope, Microscope slides holder or rack, Giemsa or Wright's stain, Timer, Gloves and laboratory coat: Personal protective equipment, including gloves and a laboratory coat, clean, lint-free wipes or bibulous paper

B. Procedure:

I. Use appropriate PPE
II. Conduct general clinical examination
III. Conduct systemic clinical examination
IV. blood sample collection by following appropriate procedure
V. Conduct thin smear Technique(see the lab procedures for this)
VI. Examine the prepared smear under a microscope using a suitable magnification.
VII. Then observe highly motile and exhibit a characteristic "corkscrew" or undulating movement. Size and Shape: Trypanosomes vary in size, but they are generally elongated and slender, measuring about 15 to 30 micrometers in length. Their width is usually around 1 to 3 micrometers.

1.3. Perform definetive diagnosis for mastities in animals by using CMT test

A. Materials : CMT Reagent (such as sodium lauryl sulfate) and a color indicator (such as bromothymol blue or methyl orange), CMT paddle or cup, Testing cups or containers, Paper towels or wipes Disinfectant solution, Gloves

B. Procedure:

1. Use appropriate PPE
2. Conduct general clinical examination
3. Conduct systemic clinical examination
4. Milk sample collection by following appropriate procedure
5. Add about 2ml of milk to each cup/kits/ and add equal volumes of the CMT reagent in to the milk → mix thoroughly→observe for gel formation with in 4 minutes in positive results.
6. Gel is produced when the CMT reagent react with the DNA of the WBC which is a reflection of the degree of udder inflammation..

7. High gel formation is indication of degree of infection of the udder

LAP Test 1

Name_____ID_Date_____

Time started:_____Time finished: _____

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

During your work**:** You can ask all the necessary tools and equipment

Task1. Perform definetive diagnosis for faciolosis in animals by using Fecal Examination.

Task2: Perform definetive diagnosis for trypanosomosis in animals by using thin smear

Task3:Perform definetive diagnosis for mastities in animals by using CMT test

LG #10	LO2 -Provide 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:

- Safe animal restraining
- Preparation of treatment equipment and materials
- Drug dose calculation and treatment of animals
- Diseased animal Isolation
- Application of disease prevention programs

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:

- Safely handle and restraine animals without causing harm or injury to animal or handler.
- Selecte and prepare treatment equipment, materials and the right choice of the drug based on the finding of detailed clinical as well as laboratory examination.
- Determine drug dose, dosage form, route of administration, and frequency of the drug after drug dose calculation and based on manufacturer instruction.
- Administer authorised animal treatments hygienically and consistently according to manufacturer's specifications or veterinary advice.
- Identify treated animals from non-treated animals to ensure compliance against the required withholding period (whp).
- Implemente preventative medicine programs for parasites and microorganisms

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. Safe animal restraining

Animal restraining typically refers to the practice of safely immobilizing or restricting the movement of animals for various purposes, such as veterinary examinations, medical procedures, grooming, or research. It is done to ensure the safety of both the animal and the people involved in handling them. Animal restraining techniques can vary depending on the species and the specific needs of the situation. Some common methods of animal restraining include:

- Physical Restraints: This involves using specialized equipment or physical techniques to limit the movement of an animal. It can include the use of leashes, harnesses, halters, or specially designed cages or crates.
- Sedation or Anesthesia: In cases where animals may become stressed, aggressive, or require extensive procedures, sedation or anesthesia may be used. This helps keep the animal calm and immobile during the process. Chemical restraints involve the administration of medications or tranquilizers to temporarily calm or immobilize the animal. This can be helpful in situations where physical restraint is not feasible or safe.
- Verbal 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.

When it comes to safely restraining animals, it's important to prioritize the well-being and safety of both the animal and the person handling it. The specific method of restraint will depend on the type of animal and the situation at hand. Here are some general guidelines for safely restraining animals

- Stay calm: Animals can sense fear or anxiety, which may escalate their stress levels and make them more difficult to handle. It's important to remain calm and composed throughout the process.
- Assess the situation: Evaluate the animal's behavior, size, and any potential risks involved. Consider whether you need assistance from others or specialized equipment.

- Use appropriate equipment: Depending on the animal, you may need to use specialized equipment such as leashes, muzzles, nets, or gloves. Ensure that the equipment is in good condition and properly fitted to minimize the risk of injury.
- Maintain a safe distance: If the animal appears aggressive or frightened, it's crucial to maintain a safe distance until you have the necessary equipment or professional assistance.
- Approach with caution: Slowly approach the animal while speaking in a calm and reassuring tone. Sudden movements or loud noises can startle or agitate the animal further.
- Minimize escape routes: If possible, confine the animal to a small, enclosed space to reduce the likelihood of escape. Close doors, gates, or windows to prevent the animal from fleeing.
- Use gentle handling: When physically handling the animal, use gentle and firm pressure to provide a sense of security without causing harm or distress. Avoid excessive force or rough handling.
- Restraining techniques: Depending on the situation and animal, different restraining techniques may be required. For example, using a towel to wrap around a small animal can help restrict movement and provide a sense of security. Larger animals may require more specialized techniques or equipment.
- Seek professional help if needed: If you are dealing with a particularly challenging or dangerous animal, it's best to contact professionals such as animal control officers, wildlife experts, or experienced veterinarians who have the necessary skills and equipment to handle the situation safely.

2.2. Preparation of treatment equipment and materials

There are various types of treatment equipment and materials used for animals, depending on the specific needs and conditions.

2.2.1. Selection of treatment equipment and materials

When selecting animal treatment equipment and materials, it's important to prioritize the well-being and safety of the animals. Here are some key considerations and commonly used items:

I. **Examination and Restraint Equipment:**

- Sturdy examination tables or mats: Choose a durable and easy-to-clean surface for examinations and treatments.
- Restraint devices: Depending on the species, you may need leashes, collars, harnesses, muzzles, or specialized restraint equipment to safely handle and restrain animals during procedures.
- Gloves: Disposable gloves are essential for personal protection and hygiene during examinations and treatments.
- Towels and blankets: Soft towels and blankets can be used to handle animals gently and provide comfort.

II. **Diagnostic Equipment**:

- Thermometers: Digital thermometers are commonly used to measure body temperature in animals.
- Stethoscope: Used for listening to heart and lung sounds.
- Sphygmomanometer: Used to measure blood pressure in animals.
- Otoscope and ophthalmoscope: Used to examine the ears and eyes, respectively.
- Weighing scales: Accurate scales are necessary to monitor an animal's weight.

III. **Treatment and Medication**:

- Syringes and needles: Various sizes of syringes and needles are needed for administering medications and vaccines.
- Topical applications: Antiseptics, ointments, creams, and sprays for wound care and skin conditions.
- Oral medications: Tablets, capsules, or liquids for oral administration.
- Injectable medications: Antibiotics, vaccines, anesthetics, and other injectable treatments.
- Bandages and dressings: Assortment of bandages, gauze, adhesive tapes, and wound dressings for wound management.

IV. **Surgical Equipment**:

- Scalpels, scissors, and forceps: Used for surgical procedures.
- Surgical drapes and gowns: Sterile drapes and gowns to maintain aseptic conditions during surgery.

- Surgical packs: Pre-packaged sterile surgical kits that contain various instruments and supplies.

V**. Monitoring and Anesthesia:**

- Anesthesia machine: Required for administering inhalant anesthesia.
- Anesthetic monitoring equipment: Pulse oximeter, capnograph, blood pressure monitor, and ECG machine for monitoring vital signs during anesthesia.
- Endotracheal tubes and masks: Used for maintaining the airway during anesthesia.

VI. Cleaning and Disinfection:

- Disinfectants: Choose appropriate disinfectants for cleaning surfaces and equipment to prevent the spread of infectious diseases.
- Cleaning brushes and sponges: Used for scrubbing and cleaning equipment.
- Waste management supplies: Biohazard bags, sharps containers, and appropriate disposal methods for hazardous waste

2.2.2. prenciples of preparation of veterinary treatment equipment and materials

the preparation of veterinary treatment equipment and materials follows similar principles as in human medicine, but with a focus on the unique needs of animals. Here are some general steps involved in preparing veterinary treatment equipment and materials:

- Understand the treatment requirements: Familiarize yourself with the specific treatment or procedure you will be performing on the animal. Review the treatment protocols, guidelines, and any specific instructions provided by the veterinarian.
- Gather necessary equipment: Collect all the equipment required for the treatment. This may include items such as examination tools (stethoscope, thermometer), diagnostic equipment (X-ray machine, ultrasound), surgical instruments, syringes, needles, catheters, bandages, and any specialized equipment specific to veterinary medicine.
- Clean and disinfect equipment: Thoroughly clean and disinfect all reusable equipment and instruments. Follow the manufacturer's instructions or established protocols for cleaning and sterilization. Proper cleaning helps prevent cross-contamination and maintain a sanitary treatment environment.

- Check equipment functionality: Ensure that all equipment is in proper working order. Inspect for any damage or malfunctioning parts. If any issues are identified, arrange for repairs or replacements as necessary.
- Set up the treatment area: Prepare the treatment area or examination room by organizing the equipment and supplies in a clean and accessible manner. Arrange them in a way that allows for efficient workflow during the treatment process.
- Prepare patient-specific materials: Some treatments may require specific medications, vaccines, or other materials tailored to individual animals. Prepare these materials in advance, following the prescribed dosage or instructions.
- Ensure safety measures: Prioritize the safety of both the animal patient and the veterinary staff. Follow established safety protocols, such as using personal protective equipment (PPE) like gloves and masks, and taking precautions to minimize the risk of injury or infection.
- Maintain documentation: Keep accurate records of equipment maintenance, cleaning and sterilization procedures, and inventory management. Documentation is vital for tracking and ensuring the quality and safety of the veterinary treatment process.

2.2.3. preparation of veterinary treatment equipment and materials

Preparation of veterinary treatment equipment and materials may vary depending on the specific treatment or procedure being performed. However, here are some general guidelines for preparing veterinary treatment equipment and materials:

- Clean and disinfect: Start by thoroughly cleaning and disinfecting all equipment and materials to ensure a sterile environment. Use appropriate disinfectants recommended for veterinary use. Follow the manufacturer's instructions for dilution and contact time.
- Gather necessary equipment: Collect all the equipment required for the particular treatment or procedure. This may include items such as syringes, needles, catheters, scalpels, scissors, forceps, speculums, thermometers, stethoscopes, and various diagnostic tools.
- Prepare medications: If medications are required for the treatment, ensure they are readily available. Follow the instructions for proper storage and handling of each medication. Prepare any necessary doses in advance, ensuring accurate measurements and labeling.

- Set up work area: Create a clean and organized work area where the treatment or procedure will be performed. Ensure there is adequate lighting, access to running water, and proper waste disposal methods.
- Prepare surgical instruments: If a surgical procedure is anticipated, ensure that all surgical instruments are clean and sterilized. Sterilization can be achieved through autoclaving or other appropriate methods recommended for the specific instruments.
- Check equipment functionality: Inspect all equipment to ensure they are in proper working condition. This includes checking for any damage, leaks, or malfunctioning parts. Replace or repair any faulty equipment.
- Prepare surgical drapes and gowns: If a surgical procedure is planned, prepare sterile surgical drapes to create a sterile field. Also, ensure that the veterinary staff is wearing appropriate surgical gowns, gloves, masks, and other personal protective equipment (PPE).
- Organize supplies: Arrange all necessary supplies and materials in a logical order to facilitate easy access during the treatment or procedure. This may include items such as sterile dressings, bandages, wound cleaning solutions, and topical medications.
- Double-check preparations: Before the treatment or procedure begins, double-check that all equipment, medications, and supplies are properly prepared and readily available. Ensure that everything is within the expiry date and has been stored appropriately.
- Maintain aseptic techniques: During the treatment or procedure, follow strict aseptic techniques to minimize the risk of infection. This includes proper hand hygiene, wearing sterile gloves, using sterile techniques for invasive procedures, and maintaining a clean environment

2.3. Drug dose calculation and treatment of animals

2.3.1. Appropriate drug selection for treatment

The appropriate drug selection for treatment of animals depends on several factors, including the definitive diagnosis, the species of animal, the overall health of the animal, and any specific considerations or contraindications. It is essential to consult with a veterinarian for accurate diagnosis and appropriate treatment options tailored to the individual animal. The veterinarian will consider various factors such as the following to determine the most suitable drug treatment:

I. Definitive Diagnosis: The specific diagnosis plays a crucial role in selecting the appropriate drug. Different diseases or conditions may require different medications or treatment approaches. For example, antibiotics may be appropriate for bacterial infections, antiparasitic drugs for parasitic infections, or anti-inflammatory medications for certain inflammatory conditions.
II. Species and Individual Considerations: Different animals may have different sensitivities or responses to medications. Some drugs that are safe and effective in one species may be toxic or ineffective in another. Additionally, individual factors such as age, weight, organ function, and concurrent health conditions will be considered to ensure the drug's safety and effectiveness.
III. Drug Efficacy and Safety: The veterinarian will consider the efficacy and safety profile of the available drugs for the specific condition. They will assess factors such as the drug's mechanism of action, dosage requirements, potential side effects, and any known drug interactions.
IV. Administration Route: The appropriate drug selection also depends on the animal's ability to tolerate and receive the medication. Some animals may be more amenable to oral medications, while others may require injectable formulations or topical applications.
V. Client Compliance: The veterinarian will also consider the client's ability to administer the medication correctly and consistently. Factors such as ease of administration, frequency of dosing, and availability of appropriate formulations (e.g., flavored tablets or liquid medications) may be considered to ensure client compliance and successful treatment outcomes.

2.3.2. drug dose calculation

Calculating drug doses for animals involves several factors, including the animal's weight, species, individual characteristics, and the specific drug being administered. However, the general guidelines on how drug dosages are calculated for animals.

- Determine the animal's weight: The weight of the animal is a crucial factor in calculating the drug dosage. Make sure to use the animal's current weight, as weight can change over time.
- Species considerations: Different animal species may metabolize drugs differently, so the dosage calculations can vary. Always consider the specific species in question.
- Determine the drug dosage range: The drug manufacturer or veterinary references typically provide dosage guidelines for animals. These references may specify dosages in terms of milligrams per kilogram (mg/kg) of body weight.

- Calculate the initial dosage: Multiply the animal's weight (in kilograms) by the recommended dosage range (mg/kg) to obtain the initial dosage. For example, if the recommended dosage range is 5-10 mg/kg and the animal weighs 5 kg, the initial dosage would be 25-50 mg.
- Consider individual factors: Individual factors such as the animal's health condition, age, organ function, and previous drug sensitivity may require adjustments to the initial dosage. Veterinarians take these factors into account to ensure the safety and efficacy of the medication.
- Splitting or rounding doses: Sometimes, the calculated dosage may not match the available tablet or liquid strengths. In such cases, veterinarians may need to split tablets or round the dosage appropriately.
- Administering the medication: The route of administration (e.g., oral, intravenous, subcutaneous) will also affect the dosage calculation. Some drugs may need to be adjusted based on the route of administration.

$$\textbf{Dosage} = \frac{\textbf{Body weight (in kg)} \times \textbf{Dose per kg}}{\textbf{Concentration}}$$

Dosage for injections

The standard formula for a % solution as shown below;

% solution = weight in grams/ volume in ml x100

Example1. A clinician wants to deworm an ox having 400kg body weight infected with nematode parasites using 1% ivermectin with a dose rate of 0.2mg/kg. Calculate the total dose required to deworm this animal.

$$= \frac{0.2\text{mg/kg} * 400\text{ kg}}{1\%} \quad = \frac{0.2\text{mg} * 400}{1\text{gm}/100\text{ml}} = \frac{80\text{ mg}}{1000\text{mg}/100\text{ml}} \quad = \frac{8000\text{ml}}{1000} = 8\text{ml}$$

Example 2; A 250 kg animal come to clinic to be treated via procaine penicillin at a dose rate of 40000IU/kg. (hint: in one vial of procaine there is 4000000IU solute, one vial diluted via 10 ml of saline water, 1IU=0.6µg). So based on this calculate;

A. The dosage in IU?
B. The dosage in g?
C. The volume needed for diluting such solute?

Solution

A. Total dose = body weight x dose rate

=250kg x 40000IU/kg= 10000000IU

B. Total dose =since 1 IU= 0.6 µg

=$10x10^6$x0.6ug =6g

C. Volume

$4x10^6$IU is diluted via 10ml of saline water so 25 ml of water is needed to dissolve $8x10^6$ IU.

Example3; a 2.5 kg dog needs two x 5 ml injections daily of a 0.3% solution of a drug. Calculate the dose rate in mg/kg/day

Given

Bw =2.5 kg

Volume = 2x 5 ml= 10ml/ day

% solution = 0.3

Required

Dose rate =?

Solution

% solution =weight in gram/volume in ml x 100

weight in g=0.3 g/ml x 10ml/100=0.03 g per day

= 30 mg/day

Dose rate = weight in mg/ Bw (kg) = 30mg/ady/ 2.5 kg

=12 mg/kg/day

Example 4; A guinea pig has to be treated with a drug at a dose rate of 20 mg/kg/8 hrs. It weighs 750 g and the drug is only available as a 2.5% solution. What is the volume of each injection? Would this change if the weight of the guinea pig was 1.5 kg and the solution's concentration increased to 5%?

Given

Body weight of guinea pig = 750 g = 0.75 kg

Dose rate 20 mg/kg/8 hrs. Notice that the guinea pig weighs less than 1 kg! Weight of drug required for this guinea pig is 20 mg x body weight (0.75 kg) = 15 mg every 8 hrs. Therefore weight of each injection is 15 mg =0.015 g

Using the standard formula

%solution = weight in g/volume in ml x100. Substituting the given values gives

2.5% = (0.015 g/volume in ml) x 100, from this

Volume in ml =ˆ0. 015 g x 100/2.5% = 0. 6 ml per injection, If the weight of the guinea pig were doubled to 1.5 kg and the dosage rate remained the same, the guinea pig would require twice as much weight of drug per injection i.e. 20 mg x body weight (1.5 kg) = 30 mg every 8 hrs If the solution available were now a5%solution, the standard formula above would give the following figures

5% =(0.030 g/volume in ml) x100,

Volume in ml =0.030 g/5%x100=0.6 ml per injection. Therefore, the volume would remain the same but the concentration would have doubled

2. Dosage for oral route

A. For bolus

- Dosage = dose rate X body weight
- Dose rate = daily weight of drug in mg/body weight of patient in kg
- **Example**; an animal weighs 200kg and requires a drug at a dose rate of 10mg/kg/day. Calculate the total dose?

Given	**solution**
Dose rate = 10mg/kg	total dose = DR X Bw
Body weight =200kg	=10mg/kg x 200kg
Required	= 2000mg
Total dose =?	

NB. It is not possible to provide simply one bolus to an animal as it causes resistance if under dose and toxic if it is overdose, so follow such calculation

- To calculate the number of tablet/bolus
- Number of tablet = total calculated dose/tablet dose
- **Example1**; a young dog weights 16 kg and requires at a dose rate of 1 mg/kg/day. The tablet strength is 8 mg. How many tablets are required per dose if they are administered b.i.d?

Given	**solution**
Bw =10kg	total dose = dr x bw =16mg
DR =1mg/kg	No. of tablet = total dose calculated/ tab. Dose
Tablet dose = 8mg	= 16mg/8mg= 2 tablet per a day
Required	so for b.i.d 2 tab. /2 =1 tablet b.i.d
Total dose =?	
Number of tablet =?	

- **Example 2;** antibiotics are given orally to a small goat weighting 4 kg. The dose rate is 50mg/kg every 24 hrs, for 7 days. The dose is to be devided so that it can be administered b.i.d. how many ml of suspension should be dispensed if it contains 100mg/ml of the antibiotic?

Given

Bw =4kg

DR = 50mg/kg

Suspension strength = 100mg/kg

Dose calculated = 200mg/day

Required

Volume =?

solution

Volume =200mg/day/100mg/ml =2 ml/day

Dose period= b.i.d = 1 ml b.i.d.

Course of Rx for 7 day = 7x 2 ml/day =14ml

- For drugs which are given via feed/water, we should follow the manufacturer prescription to administer the proper dose
- In drugs given via feed/water, even though way of administration is easy there is a high risk of drug resistance because there is a leftover drugs in the remaining leftover feeds. In addition, we are bothering about the color and the palatability.

2.3.4. Drug dosage form

Animal treatments can be administered through various methods depending on the type of treatment and the intended purpose. Here are some common methods of administering animal treatments:

- **Tablets**: Medications can be formulated into tablets or pills that can be given orally to animals. This is a common method for administering medications to pets and livestock.
- **Liquids**: Some medications are available in liquid form, such as suspensions or solutions. These can be administered orally using a dropper or syringe, or they can be mixed with food or water.
- **Pastes:** Certain treatments, particularly topical treatments for skin conditions or wound care, may come in the form of pastes or ointments. These can be applied directly to the affected area.
- **Topical applications**: Various treatments, such as creams, lotions, or sprays, can be applied topically to the skin or coat of animals. This method is commonly used for flea and tick control, as well as for treating skin conditions.
- **Dressings**: In the case of wounds or injuries, dressings may be used along with topical treatments to protect the affected area and promote healing.
- **Powders**: Powders are sometimes used to treat external parasites or fungal infections. They can be sprinkled onto the animal's coat or applied directly to affected areas.

- **Rinses:** Rinses are typically used for treating oral conditions or infections in animals. They can be applied directly to the mouth or added to the drinking water.
- **Sprays**: Sprays are convenient for applying treatments to large areas or for treating difficult-to-reach areas. They are commonly used for insect control, skin conditions, or wound care.
- **Worming**: Anthelmintic medications, used for deworming animals, are often available in the form of oral pastes or liquids. These are administered directly into the animal's mouth.
- **Oral dosing**: Some medications are administered by measuring the appropriate dose and administering it orally using a syringe or dropper.
- **Food and water preparations**: Certain medications or supplements can be mixed with the animal's food or water, making it easier to administer the treatment.
- **Injectables**: Injections are a common method of administering medications or vaccines to animals. They are typically given by a trained professional, such as a veterinarian

2.3.4. Route of administration and frequency of the drug

The route of administration and frequency of drug administration in animals can vary depending on several factors, including the type of drug, the intended purpose of administration, the species of animal, and the specific condition being treated. Here are some common routes of administration and frequencies of drug administration in animals:

- Oral administration: This involves giving the drug orally, usually in the form of tablets, capsules, or liquids. The frequency of oral administration can vary widely depending on the drug and the animal's condition. It can range from once a day to multiple times a day.
- Injectable administration: Drugs can be administered through injections, which can be given subcutaneously (under the skin), intramuscularly (into the muscle), or intravenously (into a vein). The frequency of injectable drug administration can vary from daily to weekly or even less frequently, depending on the drug and the condition being treated.
- Topical administration: Some drugs are applied topically to the skin or mucous membranes. This can include creams, ointments, sprays, or eye/ear drops. The frequency of topical drug administration can vary from multiple times a day to once a day or less often.
- Inhalation administration: Certain drugs, particularly those used to treat respiratory conditions, can be administered through inhalation. This can involve using a nebulizer or

inhaler device. The frequency of inhalation drug administration can vary, but it is often multiple times a day.

- Transdermal administration: Transdermal drug administration involves applying a drug to the skin, where it is absorbed into the bloodstream over time. This is commonly done using patches. The frequency of transdermal drug administration can range from once a day to once every few days, depending on the drug.

the frequency of drug treatment in animals can vary widely depending on several factors, including the specific drug being administered, the condition being treated, the species and size of the animal, and the veterinarian's recommendations. In some cases, drugs may be administered as a one-time treatment, such as an antibiotic given to treat a bacterial infection. Other drugs may require repeated doses over a certain period of time, such as monthly heartworm preventives given to dogs or cats. Chronic conditions, such as arthritis or diabetes, may require long-term or even lifelong drug treatment.

The frequency of drug treatment can also be influenced by the pharmacokinetics of the drug, which refers to how the drug is absorbed, distributed, metabolized, and eliminated by the animal's body. Some drugs may have a short duration of action and need to be administered multiple times per day, while others may have a longer duration of action and only need to be given once or twice a day. It's important to note that the frequency of drug treatment should always be determined by a veterinarian who can evaluate the specific needs of the animal and prescribe the appropriate dosage and treatment schedule. Veterinary professionals take into account factors such as the animal's health status, the severity of the condition, potential side effects, and the desired therapeutic outcome when determining the frequency of drug treatment.

2.3.5. Identifying treated animals from non-treated

Identifying treated animals from non-treated animals is an important aspect of ensuring compliance with the required Withholding Period (WHP). The Withholding Period refers to the period of time that must elapse between the administration of a medication or treatment to an animal and the time when the animal can be slaughtered or its products (such as milk or eggs) can be used for human consumption. This is done to ensure that any residues of the medication or treatment have

sufficiently cleared from the animal's system, reducing the risk of potential harm to human health. To effectively identify treated animals, various methods can be employed depending on the specific context and the type of treatment being administered. Here are a few common approaches:

- ✓ Physical marking: Treated animals can be physically marked in some way to distinguish them from non-treated animals. This can be done using methods such as ear tags, leg bands, or tattoos. The marking should be clearly visible and easily identifiable to facilitate accurate differentiation.
- ✓ Documentation and record-keeping: It is important to maintain comprehensive records of treatments administered to animals. This includes information such as the date of treatment, the type of treatment, the dosage, and any other relevant details. By cross-referencing these records with individual animal identification numbers or other forms of animal tracking, it becomes possible to determine which animals have been treated.
- ✓ Electronic identification systems: Utilizing electronic identification systems, such as RFID (Radio Frequency Identification) tags or microchips, can enable efficient and automated identification of treated animals. These electronic tags can store information about the treatment status of each animal, which can be read using specialized scanners or readers.
- ✓ Separate housing or grouping: Treated animals can be housed separately or grouped together in designated areas. This physical separation helps in easily distinguishing them from non-treated animals and avoids any accidental mixing or confusion.
- ✓ Testing and sampling: In some cases, samples from animals, such as blood or tissue samples, can be collected and analyzed to detect the presence of residues from the administered treatment. This can be done through laboratory testing or on-site rapid testing methods. Animals that test positive for residues would be identified as treated.

2.4. Diseased animal Isolation

Diseased animal isolation is a practice commonly employed in veterinary medicine to prevent the spread of infectious diseases among animals. Isolation, or quarantine, is particularly important when dealing with contagious diseases to protect healthy animals from becoming infected and to control the spread of the disease within a population. Here are some key aspects of diseased animal isolation: Duration of Isolation: The length of the isolation period will depend on the specific disease and the recommendations of the veterinary professionals involved. The isolation period may

vary from days to weeks, and in some cases, it may extend until the animal is no longer contagious or has fully recovered.

2.4.1. Reasons for isolation of diseased animals

There are several reasons for the isolation of diseased animals. Here are some common reasons:

- Disease Control: Isolating diseased animals helps prevent the spread of infectious diseases within a population. By separating sick animals from healthy ones, the transmission of the disease can be minimized or halted altogether.
- Protection of Healthy Animals: Isolation protects healthy animals from becoming infected. It helps maintain the overall health and well-being of the population by preventing the introduction of pathogens to animals that are not yet affected.
- Minimizing Disease Transmission: Many diseases are contagious and can spread rapidly among animals. Isolation reduces the contact and close proximity between diseased animals and healthy animals, thereby minimizing the chances of disease transmission.
- Facilitating Treatment and Monitoring: Isolation provides a controlled environment where diseased animals can receive appropriate treatment and monitoring. It allows veterinary professionals to focus on the care and management of the affected animals without the risk of spreading the disease to others.
- Preventing Zoonotic Diseases: Zoonotic diseases are those that can be transmitted between animals and humans. Isolating diseased animals reduces the risk of humans contracting the disease, protecting public health.
- Diagnostic Investigations: Isolation may be necessary to conduct diagnostic investigations on the diseased animals. By isolating them, veterinarians can collect samples, perform tests, and identify the causative agent of the disease more effectively.
- Biosecurity Measures: Isolation is an essential component of biosecurity protocols. It helps maintain strict control over disease outbreaks, prevents cross-contamination, and ensures proper containment of pathogens.
- Research and Study: Isolation of diseased animals can be important for research purposes. It allows scientists to study the disease, its progression, and potential treatment options in a controlled environment.

- Compliance with Regulations: Isolation may be required by regulatory authorities to comply with disease control measures or containment protocols. These regulations are in place to protect animal health, public health, and the environment.

2.4.2. Basic care and facility requirements for isolation of diseased animals

When it comes to isolating diseased animals, there are several basic care and facility requirements to consider. Isolation is crucial to prevent the spread of diseases and protect the health of other animals. Here are some key elements to keep in mind:

- Separate Housing: Diseased animals should be housed separately from healthy ones. Ideally, you should have a designated isolation area or facility that is physically separate from other animal housing areas.
- Adequate Space: Provide enough space for the isolated animal to move comfortably. The specific space requirements depend on the species and size of the animal.
- Quarantine Period: Determine the appropriate length of the quarantine period based on the disease and veterinary recommendations. During this time, closely monitor the animal for signs of improvement or worsening of the condition.
- Biosecurity Measures: Implement strict biosecurity measures to prevent the transmission of the disease to other animals or humans. This may include wearing protective clothing, using dedicated equipment for the isolated animal, and following proper hygiene practices.
- Ventilation and Airflow: Ensure proper ventilation in the isolation area to maintain good air quality. This helps reduce the concentration of pathogens in the air. Depending on the disease, it may be necessary to have separate ventilation systems for the isolation area.
- Sanitation: Maintain a clean and hygienic environment in the isolation facility. Regularly clean and disinfect the area, including surfaces, equipment, and bedding. Follow appropriate disinfection protocols recommended for the specific disease.
- Veterinary Care: Provide regular veterinary care to monitor the health status of the isolated animal. This includes administering necessary medications, treatments, and vaccinations as per the veterinarian's instructions.
- Staff Training: Ensure that the staff responsible for caring for the isolated animals are properly trained in handling and managing infectious diseases. They should be aware of the necessary precautions to prevent the spread of the disease.

- Waste Management: Establish a proper waste management system to handle and dispose of any waste generated from the isolation area. This includes contaminated bedding, feces, and other potentially infectious materials.
- Record-keeping: Maintain accurate records of the isolated animal's health status, treatments administered, and any significant observations. These records are valuable for tracking progress and providing necessary information to veterinarians or authorities.

2.5. Application of disease prevention programs

Preventative medicine programs for external and internal parasites and microorganisms in animals are crucial for maintaining the health and well-being of both domesticated and wild animals. These programs typically involve a combination of proactive measures aimed at preventing infestations and infections, as well as regular monitoring and treatment protocols. Here are some common components of such programs

2.5.1. Disease prevention programs

Preventative medicine programs in animals aim to promote and maintain their overall health and well-being by preventing diseases, detecting early signs of illness, and implementing appropriate interventions. These programs typically involve a combination of veterinary care, vaccinations, regular check-ups, diagnostic screenings, parasite control, and client education. Here are some common methods used to control diseas in animals:

- **Medications:** Many parasites can be effectively controlled or eliminated through the use of medications such as anthelmintics (dewormers) and antiparasitic drugs. These medications can be administered orally, topically, or through injections, depending on the specific parasite and the animal's needs.
    - ✓ **Strategic de-worming**: This refers to a planned or scheduled approach to deworming animals, typically livestock or pets. Deworming involves administering medications or treatments to control or eliminate internal parasites (worms) that can affect the health of the animals.
    - ✓ In **year round calving**, **deworm** all animals at least 3 times a year in the spring, Summer, and late fall for the timing reasons given above

Spring		Summer			Autumn/fall			winter			
M	A	M	J	J	A	S	O	N	D	J	F

- ✓ **Chemoprophylactic treatments:** Chemoprophylaxis refers to the use of medications or chemicals to prevent the development or spread of a disease. It involves administering specific drugs to individuals at risk of contracting a particular disease, with the aim of preventing or reducing the severity of the infection.
- ✓ **Vaccinations**: Vaccinations can be used to protect animals against certain parasites, such as vaccines for heartworm disease in dogs or coccidiosis in poultry. Vaccinations help to stimulate the animal's immune system to recognize and fight off the parasites. The vaccination calendar for large animals can vary depending on factors such as the specific animal species, geographic location, and disease prevalence. However, here is a general guideline for the vaccination schedule for some common large animal species:
    - ✓ Tetanus: Vaccination should be given annually or every 2 years.
    - ✓ Equine Influenza: Vaccination should be given annually or as recommended by the veterinarian.
    - ✓ Rabies: Vaccination may be recommended based on regional risk factors.
    - ✓ Clostridial Diseases (e.g., Blackleg): Vaccination is typically given annually or as recommended by the veterinarian..

- **Environmental management**: Proper management of the animal's environment can help reduce parasite populations. This can include regular cleaning and disinfection of living areas, proper waste management, and the removal of potential breeding sites for parasites like fleas or ticks.
- **Integrated pest management**: Integrated pest management (IPM) involves using a combination of strategies to control parasites. This can include a combination of medication, environmental management, and other preventative measures to reduce parasite populations and minimize the risk of infestation.

- **Quarantine and screening**: When introducing new animals into a population, it is important to quarantine them and screen them for parasites. This helps prevent the introduction of parasites to the existing animals and allows for appropriate treatment if necessary.
- **Good nutrition and hygiene**: Maintaining good nutrition and hygiene practices can help animals maintain a healthy immune system, making them less susceptible to parasite infestations. Providing a balanced diet and ensuring access to clean water can contribute to overall health and parasite resistance.
- **Vector control** is an important aspect of disease control in animals, especially when it comes to diseases transmitted by arthropod vectors such as mosquitoes, ticks, fleas, and flies. These vectors can carry and transmit various pathogens, including bacteria, viruses, and parasites, to animals, leading to the spread of diseases.
    - ✓ Implementing effective vector control measures can help reduce the transmission of these diseases, protect animal health, and prevent outbreaks. Here are some common strategies used in vector control for disease control in animals:
    - ✓ Habitat modification: Modifying the animal's environment to reduce vector breeding sites can be an effective approach. This may include draining stagnant water sources where mosquitoes breed or removing potential hiding places for ticks and fleas.
    - ✓ Insecticide use: Application of insecticides can be used to control vector populations. Insecticides can be applied directly to animals or to their surroundings, such as bedding areas or barns. It's important to choose appropriate and safe insecticides, following recommended guidelines for their use.
    - ✓ Biological control: Introducing natural predators or parasites of disease-carrying vectors can help control their populations. For example, certain species of fish can be introduced to bodies of water to feed on mosquito larvae, reducing mosquito populations.
    - ✓ Use of repellents: Animals can be treated with repellents to deter vectors from biting them. Repellents can be in the form of sprays, powders, or topical treatments. It is important to select products that are safe for use on animals and follow the instructions provided.

Insect control: is a vital component of disease prevention programs in animals, particularly in the context of vector-borne diseases. Many infectious diseases in animals are transmitted by insects, such as mosquitoes, ticks, fleas, and flies. Controlling these insect vectors helps reduce the transmission of diseases to animals and, in some cases, to humans as well. Here are some key aspects of insect control as a disease prevention program for animals:

- ✓ Vector Surveillance: Monitoring the presence and abundance of insect vectors is essential for effective control measures. Surveillance programs track vector populations, their distribution, and disease prevalence rates in the region. This information helps identify high-risk areas and guides targeted interventions.
- ✓ Habitat Modification: Modifying the animal's environment to reduce insect breeding sites is an important preventive measure. This may involve eliminating stagnant water sources where mosquitoes breed, clearing vegetation to reduce tick habitats, and implementing proper waste management practices to minimize fly populations.
- ✓ Insecticide Application: The strategic use of insecticides is an integral part of insect control programs. Insecticides can be applied directly to animals (e.g., insecticidal sprays, dips, or spot-on treatments) or to their surroundings (e.g., insecticide-treated bed nets, environmental sprays). These treatments help kill or repel vectors, reducing the likelihood of disease transmission.
- ✓ Integrated Pest Management (IPM): IPM is an approach that combines multiple strategies to control insect vectors. It involves a combination of preventive measures, biological control methods, and targeted insecticide use. IPM focuses on long-term, sustainable solutions that minimize reliance on chemical insecticides and consider the ecological balance of the environment.

Self-check 2	

Name…… ID…… Date…….

Directions: Answer the following questions below.

Part I: true/false questions

1. Isolation of diseased animals helps prevent the spread of infectious diseases within a population.
2. Isolation is not necessary for conducting diagnostic investigations on diseased animals.
3. Biosecurity measures are not essential in animal isolation.
4. Regular cleaning and disinfection of the isolation area are important for maintaining a hygienic environment.
5. Adequate space is not required for isolated animals.

Part II: Choose the best answer among the given alternatives (1pts each)

1. What is the primary purpose of diseased animal isolation?
   a. To provide a controlled environment for research purposes.
   b. To prevent the spread of infectious diseases within a population.
   c. To ensure proper disposal of waste generated from diseased animals.
   d. To comply with regulatory authorities' requirements.
2. Which of the following is NOT a reason for isolating diseased animals?
   a. Facilitating treatment and monitoring.
   b. Preventing zoonotic diseases.
   c. Promoting social interaction among animals.
   d. Conducting diagnostic investigations.
3. What is an essential component of biosecurity protocols in animal isolation?
   a. Regular cleaning and disinfection of the isolation area.
   b. Providing adequate space for the isolated animal.
   c. Administering necessary medications and vaccinations.
   d. Establishing a waste management system.

4. What is the purpose of ventilation in the isolation area?
    a. To provide a comfortable living space for the isolated animal.
    b. To minimize the chances of disease transmission.
    c. To facilitate diagnostic investigations.
    d. To comply with regulations.
5. What should be documented in the records of isolated animals?
    a. The cost of veterinary care provided.
    b. The number of healthy animals in the population.
    c. The health status, treatments, and observations.
    d. The duration of the quarantine period.
6. Which of the following is a common method used to control parasites in animals?
    a) Vaccinations
    b) Regular check-ups
    c) Client education
    d) Strategic de-worming
7. What does chemoprophylaxis refer to in disease prevention programs?
    a) Regular cleaning and disinfection of living areas
    b) Removal of potential breeding sites for parasites
    c) Use of medications to prevent the development or spread of a disease
    d) Quarantine and screening of new animals
8. How often should tetanus vaccination be given to animals?
    a) Every month
    b) Annually or every 2 years
    c) Every 6 months
    d) Only when symptoms are observed

Part III:Short Answer(3 points each)

1. What are some common reasons for isolating diseased animals?
2. What are some key elements to consider when isolating diseased animals?
3. How can preventative medicine programs help control parasites in animals?

Note: **Satisfactory rating - 20 points** **Unsatisfactory - below 20 points**

LG #11	LO3 Provide post treatment advice to the owner and case follow up

Instruction sheet 3

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

- Post treatment monitoring of animal
- Environmental implications to treated animals
- Cleaning of equipment and waste disposal

Record keeping 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:

- Monitor and report post-treatment Animal health condition
- Perform Follow up of diseased and/or treated animals
- Identify, assess and controle environmental implications associated with the treatment of animals
- Clean equipment, worksite and dispose waste, including animal residues,
- Store health treatments to manufacturers recommendations, industry and enterprise requirements.
- Document relevant information is according to industry and enterprise requirements

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.

Introduction

Post-treatment advice in the context of animal treatment refers to the recommendations and guidance provided to owners or caretakers after their animal has undergone medical treatment. Post-treatment advice animals, also known as emotional support animals or therapy animals, can play a significant role in the recovery and well-being of individuals undergoing treatment or therapy. Here are some key aspects of post-treatment advice for animals:

- **Medication and treatment compliance**: Follow the veterinarian's instructions regarding the administration of medications, including dosage, frequency, and duration. Ensure that the animal completes the full course of treatment, even if they appear to have recovered.
- **Rest and recovery**: Certain treatments or procedures may require the animal to rest or limit their physical activity. Provide a calm and comfortable environment for the animal to recover, and avoid activities that could strain or disrupt the healing process.
- **Wound care and dressings**: If the animal has undergone surgery or has wounds that require care, follow the veterinarian's instructions for proper wound management. This may include cleaning the wound, applying dressings or medications, and preventing the animal from interfering with the wound.
- **Dietary considerations**: In some cases, specific dietary adjustments may be necessary following treatment. Follow the veterinarian's advice regarding feeding instructions, including any dietary restrictions or recommendations to support the animal's recovery.
- **Observation and monitoring**: Keep a close eye on the animal's behavior, appetite, and overall well-being. Monitor the site of treatment, such as surgical incisions or injection sites, for any signs of infection, swelling, or abnormal discharge. Report any concerns or changes to the veterinarian.
- **Follow-up appointments**: Schedule and attend any follow-up appointments recommended by the veterinarian. These visits allow the veterinarian to assess the animal's progress, make any necessary adjustments to the treatment plan, and provide additional care instructions.
- **Preventive measures**: Depending on the condition being treated, preventive measures may be advised to minimize the risk of recurrence or complications. This could include measures such as vaccination, parasite control, or lifestyle modifications. Follow the veterinarian's recommendations to help maintain the animal's health.

- **Emotional support**: Just like humans, animals may experience stress or discomfort during and after treatment. Provide a calm and supportive environment for the animal, offering comfort and reassurance as needed.

3.1 Post treatment monitoring of animal

Post-treatment monitoring of animals is an essential aspect of veterinary care to ensure their well-being and assess the effectiveness of the treatment provided. The specific monitoring procedures may vary depending on the type of animal, the nature of the treatment, and the underlying condition being treated. However, here are some general considerations for post-treatment monitoring of animals:

I. **Observation:** Regular observation is crucial to monitor the animal's behavior, appetite, and overall condition. Look for any signs of distress, pain, or adverse reactions to the treatment. Changes in behavior, such as lethargy or aggression, should be noted and reported to the veterinarian.

II. **Vital signs**: Monitoring vital signs, including body temperature, heart rate, and respiratory rate, can provide valuable information about the animal's physiological status. These measurements can help identify any abnormalities or complications that may arise after treatment.

III. **Physical examination**: Conducting a thorough physical examination allows veterinarians to assess the animal's general health and detect any changes or abnormalities. This can include checking for wounds, swelling, or other physical signs related to the treatment or the underlying condition.

IV. **Laboratory tests**: Depending on the specific treatment and condition, laboratory tests may be necessary to evaluate the animal's organ function, blood parameters, or medication levels. These tests can help determine the treatment's efficacy and identify any potential side effects or complications.

V. **Follow-up visits:** Regular follow-up visits to the veterinarian are often necessary to assess the animal's progress and make any necessary adjustments to the treatment plan. These visits allow for ongoing monitoring, addressing any concerns, and providing additional care as needed.

3.1.1. Main post treatment monitoring activities

Post-treatment monitoring activities for animals also vary depending on the type of treatment and the specific condition being addressed. However, here is a general list of post-treatment monitoring activities commonly performed in veterinary medicine:

- **Veterinary check-ups**: Schedule and attend regular veterinary appointments to assess the animal's overall health, monitor treatment progress, and address any concerns or complications.
- **Physical examinations**: Veterinarians conduct physical examinations to evaluate the animal's condition, check for any physical changes or abnormalities, and monitor vital signs.
- **Laboratory tests**: Various laboratory tests, such as blood work, urine analysis, fecal examinations, or tissue biopsies, may be performed to assess treatment response, monitor organ function, and detect any signs of relapse or complications.
- **Behavior assessment**: Monitor the animal's behavior to evaluate any changes in temperament, activity level, or appetite. This can help identify potential treatment-related side effects or behavioral issues.
- **Medication management**: If the animal is on medication, regular monitoring of medication administration, dosage adjustments, and potential side effects is necessary. This may involve working closely with the veterinarian to ensure proper medication compliance and efficacy.
- **Dietary monitoring**: Monitor the animal's diet and nutritional intake as recommended by the veterinarian. This may involve adjusting the diet based on the treatment, ensuring appropriate nutrition, and addressing any dietary restrictions or special requirements.
- **Wound care and healing:** If the animal has undergone surgery or wound treatment, monitoring wound healing progress, performing dressing changes, and ensuring proper post-operative care are essential.
- **Environmental modifications**: Depending on the condition and treatment, post-treatment monitoring may involve making necessary adjustments to the animal's living environment, such as temperature control, humidity control, or providing a stress-free space for recovery.

3.2 Environmental implications to treated animals

The environment can have a significant impact on clinically treated animals. Here are some ways in which the environment can affect animals undergoing clinical treatment:

- **Stress levels**: The environment plays a crucial role in the stress levels of clinically treated animals. An environment that is noisy crowded, or lacks stimulation can increase stress and anxiety in animals. High-stress levels can interfere with the healing process and negatively impact their overall well-being.
- **Recovery and healing:** The environment can either facilitate or hinder the recovery and healing process of clinically treated animals. A clean and hygienic environment is essential to prevent infections and promote healing. Additionally, providing a comfortable and supportive environment, such as appropriate bedding and temperature control, can aid in the recovery of animals.
- **Social interaction:** Animals are social beings, and social interaction can have a positive impact on their well-being. Being in an environment that allows for appropriate socialization with other animals or humans can help clinically treated animals feel more secure, reduce stress, and promote a faster recovery.
- **Environmental enrichment**: Providing environmental enrichment, such as toys, puzzles, or opportunities for physical exercise, can have a positive impact on clinically treated animals. Enrichment activities can reduce boredom and improve the animal's mental and physical stimulation, which can contribute to their overall well-being and recovery.
- **Exposure to pathogens:** The environment can expose clinically treated animals to various pathogens, which can hinder their recovery process or lead to secondary infections. Maintaining a clean and pathogen-free environment is crucial in preventing such complications and ensuring the effectiveness of clinical treatment.
- **Noise and lighting:** Excessive noise levels and improper lighting can negatively impact animals' stress levels, sleep patterns, and overall well-being. Providing a quiet and appropriately lit environment can help create a calming atmosphere for clinically treated animals, promoting better recovery and reducing stress.
- **Safety and security:** The environment should be safe and secure for clinically treated animals. Hazards such as sharp objects, toxic substances, or unstable structures can pose a

risk to their well-being. Ensuring a safe environment can prevent accidents or injuries that could further complicate their clinical treatment.

3.2.1. Prevention of environmental impacts on treated animals

Preventing environmental impacts on treated animals involves minimizing their exposure to harmful substances and providing them with a safe and healthy environment. Here are some ways to prevent environmental impacts on treated animals:

- **Proper Housing and Shelter**: Provide appropriate housing and shelter that meets the animals' specific needs. Ensure that the facilities are well-maintained, clean, and free from hazards that could negatively affect the animals' health and well-being.
- **Reduced Chemical Exposure**: Minimize the use of chemicals in and around animal housing areas. This includes using non-toxic cleaning agents, avoiding pesticides or herbicides near animal enclosures, and using environmentally friendly products for pest control.
- **Good Ventilation**: Ensure proper ventilation in animal housing areas to maintain air quality and reduce the risk of respiratory issues. Proper ventilation helps remove harmful gases, dust, and other airborne contaminants that may impact the animals' health.
- **Temperature Control**: Control temperature and humidity levels within animal housing to create a comfortable and stress-free environment. Extreme temperatures can negatively affect animals' health and well-being, so providing appropriate heating, cooling, or insulation is essential.
- **Nutrition and Water Quality**: Provide animals with a balanced diet that meets their nutritional requirements. Ensure that the water provided is clean, free from contaminants, and regularly tested for quality. Proper nutrition and access to clean water help maintain animals' health and reduce the risk of environmental impacts.
- **Responsible Medication** Use: Administer medications to animals according to prescribed guidelines and under veterinary supervision. Avoid overuse or misuse of medications, as this can lead to the accumulation of pharmaceuticals in animal waste and potentially affect the environment through water or soil contamination.
- **Waste Management**: Implement proper waste management practices to minimize environmental impacts. This includes appropriate disposal of animal waste, such as manure,

and preventing runoff or leaching into nearby water bodies. Consider composting or recycling options for waste materials, where applicable.

- **Environmental Enrichment**: Provide environmental enrichment to animals to promote their well-being and reduce stress. Enrichment activities and structures can help prevent negative behaviors that may lead to environmental impacts, such as excessive digging, chewing, or aggression.
- **Regular Monitoring**: Regularly monitor the health and behavior of treated animals to identify any potential environmental impacts or adverse reactions. Early detection allows for prompt intervention and mitigation measures to minimize harm.
- **Staff Training and Education**: Provide comprehensive training to animal care staff on best practices for minimizing environmental impacts. Education should cover topics such as proper handling of animals, waste management procedures, responsible medication use, and environmental conservation principles

3.3 Cleaning of equipment and waste disposal

Proper cleaning of equipment and waste disposal are crucial in maintaining a clean and safe environment in veterinary post-treatment areas. Here are some guidelines to follow for effective cleaning and waste disposal:

- **Personal Protective Equipment (PPE):** Before starting any cleaning or waste disposal activities, ensure that you are wearing appropriate PPE such as gloves, masks, and protective clothing. This helps protect you from potential hazards.
- **Segregation of Waste:** Separate different types of waste into appropriate categories. Common waste categories in a veterinary setting include general waste, hazardous waste, and medical waste. Follow local regulations and guidelines for waste segregation.
- **General Cleaning:** Start by removing any visible debris or waste from the equipment or surfaces using disposable towels or cleaning tools. Use a general-purpose detergent and water solution to clean the equipment thoroughly. Scrub all surfaces, paying special attention to areas that come into direct contact with animals or their bodily fluids.
- **Disinfection**: After cleaning, disinfect the equipment using a suitable veterinary disinfectant. Follow the manufacturer's instructions for proper dilution and contact time. Pay attention to

high-touch surfaces such as examination tables, treatment areas, and surgical instruments. Allow the disinfectant to air dry or use disposable towels to dry the equipment.

- **Sharps Disposal**: Sharps such as needles, syringes, and scalpels should be disposed of in puncture-resistant and clearly labeled sharps containers. Ensure that these containers are easily accessible and located near treatment areas. Do not overfill the containers, and follow local regulations for their proper disposal.
- **Medical Waste Disposal**: Medical waste, such as soiled bandages, gloves, and other disposable items, should be collected in properly labeled and leak-proof containers. Use biohazard bags or containers specifically designed for medical waste disposal. Seal the bags or containers securely and arrange for their proper disposal through licensed medical waste management companies.
- **General Waste Disposal**: Non-hazardous general waste can be disposed of in regular waste bins or bags. Ensure that waste bins are regularly emptied and that waste is properly contained to prevent contamination or odors.
- Regular Cleaning Schedule: Establish a regular cleaning schedule to ensure that equipment and treatment areas are cleaned and disinfected at appropriate intervals. This helps maintain a clean and hygienic environment and prevents the buildup of contaminants.

3.3.2. Storing health treatment Equipment

Storing health treatments according to manufacturers' recommendations, industry standards, and enterprise requirements is crucial for ensuring the safety, efficacy, and quality of healthcare products. Proper storage practices help maintain the integrity of medications, medical devices, and other treatments, preventing degradation, contamination, or loss of potency. Here are some general considerations for storing health treatments:

- **Temperature control:** Many health treatments are sensitive to temperature fluctuations. Follow the manufacturer's instructions regarding the recommended temperature range for storage. Common temperature ranges include room temperature (around 20-25 degrees Celsius), refrigerated (2-8 degrees Celsius), and frozen (-20 degrees Celsius or colder). Use appropriate storage equipment such as refrigerators, freezers, or temperature-controlled cabinets to maintain the required temperature conditions.

- **Humidity control**: Excessive humidity can affect the stability and quality of health treatments, particularly medications. Store treatments in dry environments and avoid exposing them to high humidity levels. If necessary, consider using desiccant packets or other humidity control methods.
- **Light protection**: Some health treatments, especially certain medications, may be sensitive to light. Follow the manufacturer's recommendations regarding light exposure. Store light-sensitive treatments in opaque containers or packaging to shield them from direct light.
- **Security and access control**: Ensure that health treatments are stored in secure areas to prevent unauthorized access, theft, or tampering. Implement access control measures such as locked cabinets, restricted access areas, or electronic security systems as appropriate.
- **Inventory management**: Maintain proper inventory management practices to track the storage, usage, and expiration dates of health treatments. Use a first-in, first-out (FIFO) approach to ensure that older treatments are used before newer ones to minimize the risk of expiration.
- **Labeling and documentation**: Clearly label all health treatments with relevant information, including the product name, lot number, expiration date, and storage conditions. Keep accurate records of storage conditions, receipt dates, and any other pertinent information.
- **Regulatory compliance**: Stay updated with regulatory requirements and guidelines specific to your region, such as those issued by the Food and Drug Administration (FDA) or other relevant regulatory bodies. Adhere to any specific storage requirements or recommendations provided by regulatory authorities.

3.4 Record keeping

Post-treatment record-keeping for animals is an essential aspect of ensuring their health and welfare. Proper documentation allows for accurate tracking of treatments, observations, and any potential adverse effects. Here are some key considerations for record-keeping after animal treatment:

- Identification: Each animal should have a unique identifier, such as an ear tag, microchip, or tattoo. This identification should be recorded and associated with the animal's treatment records.
- Treatment details: Record the details of the treatment given to each animal, including the date, type of treatment, dosage or concentration used, route of administration (e.g., oral, injection), location of administration, and the name of the person who administered the treatment.

- Observations: Note any relevant observations made before and after treatment. This could include changes in behavior, appetite, weight, or any adverse reactions observed. Detailed and accurate descriptions of these observations are important for monitoring the animal's response to treatment.
- Adverse events: If any adverse events or side effects occur following treatment, document them thoroughly. Include the nature and severity of the event, the animal's response, and any actions taken to address the situation, such as contacting a veterinarian or adjusting the treatment plan.
- Follow-up care: If there are specific instructions for post-treatment care, such as restrictions on feeding or exercise, record these instructions and ensure they are followed.
- Dates and timelines: Maintain a chronological order of treatments, observations, and events for each animal. This helps in tracking progress, identifying patterns, and making informed decisions about future treatments or interventions.
- Communication: If multiple individuals are involved in the care of the animals, ensure effective communication regarding treatment records. This could involve using a centralized record-keeping system, sharing information through electronic platforms, or holding regular team meetings to discuss treatment updates.
- Storage and organization: Keep the records in a secure and organized manner to ensure easy retrieval and confidentiality. Electronic databases or dedicated software systems can be used for efficient data management.

Self-check 3	Written test

Name…… ID…… Date…….

Directions: Answer all the questions listed below.

Part I: True or false questions (1point each)

1. Antibiotic resistance can develop as a result of overuse or misuse of antibiotics in animal treatment.
2. Treating animals in agriculture or wildlife conservation never involves habitat alteration.
3. Introducing pharmaceuticals or pesticides to control diseases in wildlife populations always has positive effects.
4. Treating animals in one location and subsequently releasing them into another cannot introduce invasive species.

Part II: multiple choice Questions (1 points each)

1. Which of the following is an environmental implication of treating animals?
   A. Increased biodiversity
   B. Reduced greenhouse gas emissions
   C. Pharmaceutical contamination
   D. Enhanced ecological balance
2. What is one solution to address the environmental implications of treating animals?
   A. Increased use of antibiotics
   B. Improper disposal of waste
   C. Responsible use of pharmaceuticals
   D. Clearing land for livestock farming
3. What can improper handling and disposal of animal waste lead to?
   A. Water pollution
   B. Nutrient balance in aquatic ecosystems
   C. Release of greenhouse gases
   D. All of the above
4. post-treatment advice for animals may include:
   A. Playing vigorous activities with the animal
   B. Ignoring any changes in the animal's behavior
   C. Following the veterinarian's instructions regarding medication administration

D. Avoiding follow-up appointments with the veterinarian

5. Post-treatment monitoring of animals may involve:
    A. Regular observation of behavior and appetite
    B. Skipping follow-up visits to the veterinarian
    C. Disregarding any changes in vital signs
    D. Avoiding physical examinations
6. Which of the following is an essential aspect of post-treatment monitoring?
    A. Providing emotional support to the animal
    B. Monitoring the animal's vital signs
    C. Skipping follow-up appointments
    D. Discontinuing medication without consulting the veterinarian

Part III:Short answer questions

1. What are some potential environmental implications of treating animals?
2. Name two solutions to prevent the environmental implications of treating animals.
3. Why is record-keeping important after animal treatment?
4. What are some key aspects of post-treatment advice for animals?
5. Why is post-treatment monitoring important for animals?
6. What are some common post-treatment monitoring activities in veterinary medicine?
7. How can owners or caretakers provide emotional support to animals during the post-treatment period?

Note: **Satisfactory rating - 17 points** **Unsatisfactory - below 17 points**

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