

Animal Health Care Service

Level –III

Based on March 2018, Version 3 Occupational
Standard

Module Title: - Participating in General Clinical
Examination of Animals

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LG #77

LO #1- Prepare Materials, Tools Equipment, Work Area and Animals for Clinical Operations

Instruction sheet

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

- Preparing and applying materials, equipment and tools used for clinical services
- Capturing and restraining animals humanely and safely for clinical examination
- Using PPE accordance with OHS procedures
- Preparing work area for clinical activities.
- Adopting and practicing safe work practice procedures.
- Checking all equipment before operate with basic safety.
- Preparing proper carcass disposal and incinerator facilities.

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

- Prepare and apply all the necessary materials, equipment and tools used for clinical services.
- Restrain animals humanely and safely for clinical examination
- Uses PPE accordance with OHS procedures
- Prepare work area safely for clinical activities.
- Adopt and practices safe work practice area.
- Checks all equipment before operate with basic safety.
- Prepares proper carcass disposal and incinerator facilities.

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”. Try to understand what are being discussed. Ask your trainer for assistance if you have hard time understanding them.
4. Accomplish the “Self-checks” which are placed following all information sheets.
5. Ask from your trainer the key to correction (key answers) or you can request your trainer to correct your work. (You are to get the key answer only after you finished answering the Self-checks).
6. If you earned a satisfactory evaluation proceed to “Operation sheets”
7. Perform “the Learning activity performance test” which is placed following “Operation sheets” ,
8. If your performance is satisfactory proceed to the next learning guide,
9. If your performance is unsatisfactory, see your trainer for further instructions or go back to “Operation sheets”.



Information Sheet 1- Prepare materials, equipment and tools

1.1 Introduction

Clinical services are place where the treatment (treatment of diseased animals and control of production limiting disorders), Preventive services (avoiding the outbreak of diseases) Provision of drugs, vaccines and other products (such as artificial insemination) human health protection (inspection of marketed animal products). Veterinarians also do research to improve the spectrum of knowledge on animal biology and animal science. Clinical veterinarians help animals with health problems, diseases, infections, illnesses, wounds, deformity and fractures. A vet's career is much specialized, requiring specific equipment and instruments at veterinary clinical services. As with any profession, there are certain pieces of equipment that are 'must-haves'. These tools, devices and technology allow vets to provide top class medical care to their animal-patients. From exam tables and lighting to autoclaves, these tools and tech are must-haves for any new vet clinic. Here are animal top picks for the equipment you need for clinical services.

1.1 Safety materials (Personal protective Equipment)

- Respiratory protection: Airline, Cartridge, Face mask
- Eye protection: Spectacle, Google, Shields
- Hand protection: Glove (Rectal & Surgical)
- Foot protection: Shoes/ boots
- Hearing protection: Ear muffs/plugs
- Skin protection: long sleeved cloths/ aprons
- Head protection: Caps/ Hat

1.2 Tools Used for restraining

- Mouth gages
- Rope
 - Bull holder
 - Milker's restraining rope
 - Nose twitch
 - Chains, etc.

1.3 Tools used as aid for drug administration

- Syringes with needle
- Stomach tube

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- Drenching gun
- Bulling gun

1.5. Tools used for surgical operation

- Burdizzo castrator
- Forceps
- Emasculator
- Hoof trimmer
- Dehorning saw
- Hair clipping machine
- Trocar and canula
- Hoof picks
- Teat dilator
- Tattooing forceps
- Scissors
- Scalpels, etc.

1.4 Tools used for diagnostic purpose

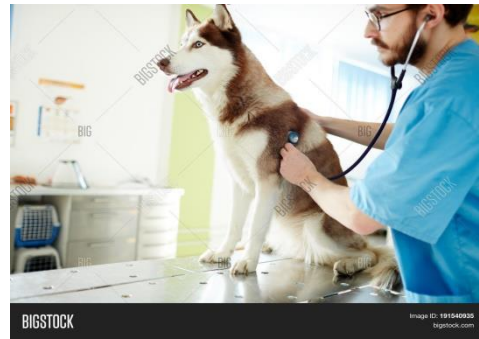
- Clinical Thermometer
- Disinfectants (Savlon, Iodine, Alcohol), etc.
- Stethoscope
- Vaginal speculum
- Microscope

1.6. Tools used for sanitation purpose

- Enough water (washing trough)
- Body brush
- Cotton/ Gauze
- Autoclave, etc.
- Detergent (Soap, Omo, Ajaksi, Barakina)
- Iodine, alcohol, savlon

A. Veterinary stethoscope

Veterinary stethoscope was specifically used for vet's clinical practice. This specialized stethoscope will allow you to bypass all that fur and animal muscle to hear a heartbeat or lungs loud and clear.



B. Thermometer

A digital thermometer is used to take an animal body temperature. It is a small hand-held device with a "window" showing your temperature in numbers. There are many kinds of digital thermometers. Most digital thermometers are easy to use and measure body temperature within seconds.



**One device
Three Applications**



C. Disinfectants

Disinfectants are chemical agents that kill pathogens on contact. The choice of disinfectant depends on the purpose of disinfectant. In the case of notifiable disease, it must be active against a defined pathogen. In the case of prophylactic disinfection, it must be active against a broad spectrum of microorganism. Disinfection in animals house/premises includes the following:

- Livestock buildings.
- Livestock/ their feed transportation vehicles.
- Incubators
- Hatching tray
- Milk tankers
- Milking machines
- Feeding and drinking utensils.



- Bedding materials etc....

D. Soap and detergents

Are essential components of cleaning procedures prior to many of decontamination procedures. The primary aim is the removal of organic material, dirt, greases from the surface to be disinfected. Mostly important in hospitals, surgeries, dairies, food – processing areas. Soapy combination of phenolic or quaternary ammonium (QUATS) & diphors are used.

E. Oxidizing agent

These are disinfectants recommended for most application. E.g. Chlorine, hypochlorite sol -Virkon, a modern disinfectant with outstanding viricidal properties.

F. Alkalis

Effective against wide range of pathogens. E.g. sodium hydroxide (caustic soda) & sodium carbonate (washing soda). Ideal agent for decontaminating animals housing, yards, drains, effluent waste pit & sewage-collection areas.

G. Acids

Generally highly virucidal. E.g. Hydrochloric acid, a strong acid & less toxic than others. - Citric acid, a milder acid Acids particularly useful for the inactivation of FMD virus, when they added to detergents.

H. Aldehydes

Glutaraldehyde are very effective disinfectant against all virus family & other micro organisms in concentration of 1 to 2 percent. Formalin is effective to kill various Bacteria, virus, Fungi & including anthrax spore. Also effective against mycobacterium vitro. Gaseous formaldehyde are products used as fumigants for poultry houses. As long as the houses are empty. Because they are toxic to birds. **E.g.** Viricide also important to decontaminate:

- Air space
- Equipments such as electronic device
- Inside motor of vehicles.

Basic principles to consider for disinfection are listed below:

- Some disinfectant solution may only be active for few days after mixing or preparing



- Not use expired or contaminated disinfectant by manures.
- Not to be applied to animals & feeders directly unless labeled for such use.
- There must be sufficient concentrates & contact time, to have effective result. Important to rotating low PH & high PH compatible disinfectant, to reduce the possibility of microbial resistance in continuous use of same disinfectant.
- Microbes can acquire resistance to disinfectants, just as they can to antibiotics.

I. Acid & Alkalis

When diluting concentrated chemicals, the concentrate should always be added to water never water to concentrate. Do not mix acid & alkali disinfectants. Apart from the resulting chemical remix, the effect of both chemical is nullified. Read all labeled instruction & use all personal protective equipments properly. If contact occurs:

- Wash with copious amount of water immediately.
- Alkali burns, apply vinegar;
- Acid burns, apply bicarbonate soda
- Eyes wash the eyes copiously with eye wash & refer to hospital.

Cauteries

This is one of the best tools for sealing and closing wounds in vet surgery clinics. Having the right cauterizing machine will make a huge difference. From stopping blood loss and exsanguination, to closing amputations, they are a very important bit of kit. It's best to carefully weigh up your options here. The most useful and popular are those which allow you to change the size of the tip and change batteries.

Lighting

Lighting will play a key role in ensuring you have maximum visibility of your patients. This will allow you to accurately diagnose problems and provide precise treatment. Many are specially designed for vet clinics. You'll need to consider all your lighting requirements. For example, you will need large bright surgical lights, but also smaller, more concentrated exam lights.

Veterinary ultrasounds

In order to provide speedy and effective treatment you need to see what the problem is. Diagnostic imaging is the key to delivering an accurate diagnosis. Ultrasound technology is constantly improving, with new models providing greater levels of accuracy. Real-time ultrasound equipment with external cameras drastically reduces



examination time. They do this whilst at the same time producing deeper and clearer images.

Portable Ultrasound Scanner

If your practice will be making house calls, especially to areas in the countryside, a portable ultrasound will come in very handy. Being able to examine an animal in real-time, away from the clinic, will be make or break. This tool is especially crucial for vets during breeding seasons as it makes it far easier to check-up on gestating animals.

Digital x-ray imaging machines

This piece of equipment will allow you to quickly and accurately get clear images of bones, muscles and internal organs, thus skipping the need for dark room processing. The images you get can also be enhanced, enlarged and focused. This gives you the ability to make a more accurate diagnosis with fewer retakes. There are various types of DR systems, each relying of different technologies to obtain digital images. You can select the DR system that best suits your practice's needs and budget.

Anaesthesia Machines

High quality veterinary anaesthesia machines are also a key piece of equipment. These help ensure your pet-patients stay still during scans, invasive exams and procedures. The correct anaesthetic equipment will ensure animals receive adequate oxygen, ventilation and breathing while under anaesthesia. They will ensure the anaesthetics are properly mixed according to predetermined concentrations. This automated process minimizes risk to the patient.

Disinfectant and sterilization

Disinfectants are used to rapidly kill bacteria. They kill off the bacteria by causing the proteins to become damaged and outer layers of the bacteria cell to rupture. Ensuring you run a clean and hygienic clinic is vital, especially when it comes to equipment. Vets must ensure proper sterilization of their medical tools at all times. This has two main benefits. Firstly, it is absolutely essential for safe, contamination free work. Secondly, it can extend the life of commonly used instruments, which can save you money in the long run. Washer disinfectors use steam sterilization, which helps ensure all your tools are safe to use again.



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| Self-check 1 | Written test |
|---------------------|---------------------|

Name..... ID..... Date.....

Directions: Answer all the questions listed below. Examples may be necessary to aid some explanations/answers.

Test I: Choose the best answer (4 points each)

1. Unsafe work in terms of personal safety, work shop safety, and tools and equipment safety leads to
A. Accident B. Damage C. A & B
2. which tool is not used during vaccinate animal
A. Crush B. vaccinate syringe C. Inframammary syringe D. Saline water
3. From the given choose which one is not such used equipment at animal clinic.
A. Microscope B. Treatment syringe C. Burdizo D. Hoof trimmer
E. Wool cutter F. All

Test II: Short Answer Questions

1. List the uses of PPE (3 point)

2. Write down how we can use thermometer during measuring animal patients? (3 point).

3. Write atleast three examples of equipment that for minor surgical at clinics? (3points)

4. To protect our hand from any biological and chemical hazard the first PPE we can use is _____ (2point)
5. Write atleast 4 equipment that used during treating animal? (2point)

6. Explain the purpose and use of clinical service in animal health issue? (6 Points)

7. List the major equipment that more used in animal clinics? (10pts)

You can ask your teacher for the copy of the correct answers.

Note: Satisfactory rating - 10 points Unsatisfactory - below 10 points



Information Sheet 2- Capturing and Restraining Animal Humanely and Safely for Clinical Examination

2.1 Capturing and restraining animal humanely and safely

Restraining means hold back, check, or suppress action; to keep something under control; or to deprive of physical freedom. Since animals often resist many of the clinical examination procedures, it may be necessary to employ some suitable means of restraint, in order to be able to carry out the examination safely and without danger to the clinician or his assistants. Restraining is the restriction of movement of any animal and may vary from simply confining the animal in an enclosure, small space, box, or crate, to completely restricting its muscular activity (immobilization). The methods animal restraining may be classified as:

- Physical restraint when various instruments are employed.
- Chemical restraint when drugs inducing varying degrees of sedation or immobilization are administered.
- Verbal/Moral restraining which can be more practiced by owner.

Animal capturing and restraining Skills-Professionalism and Safety:-

- The public watches us to learn how to properly handle animals.
- Being professional means being SAFE and HUMANE.
- Good animal handling skills prevent staff from being injured.
- Good animal handling skills reduce stress for the animal.

Examples of Safe Animal Handling:

- Be aware of the special stressors for animals in the clinic setting.
- The clinic is extremely chaotic for any animal-there are an incredible number of smells and other stimuli and animals are likely to be confused and distressed.
- Many of our patients have lived entirely outdoors and have not been handled or examined before. They may not have any experience on a leash and may panic in response.
- Even the most social animal may exhibit aggression toward other animals, particularly in a strange environment and may redirect to nearby people when over-stimulated.
- *Never put your face directly into the face of a dog or cat.*



- Do not move in behind or crowd around a dog.
- Concentrate on the animal you are handling without being distracted by other activities.
- NEVER sit on the floor while handling/examining a dog. If the animal becomes aggressive or aroused you will be unable to move away or protect yourself and risk serious facial bites.
- Always be prepared to protect yourself or move away quickly in the event an animal becomes aggressive unexpectedly.
- Safe and effective animal capturing requires a thorough understanding of the normal behavior and responses of each species. There is no substitute, however, for careful observation and experience.

NOTE: If there is any doubt about the temperament of an animal-ask for assistance. There are no extra points for being a 'hero'. The safety of our staff and patients is most important!

2.2 Methods of Restraint

A. Verbal/moral Restraint

It is more practiced by owner e.g., feed provision, massaging, calling name of animal etc. many dogs know some commands or can at least recognize authority, even if the command is unfamiliar. Commands such as sit, stay, come, down, no or even heel may be useful tools to encourage a dog to cooperate. Also, soft quiet words can calm a frightened animal. Yelling or screaming should never be used as it can cause the animal to become more fearful or aggressive.

B. Physical Restraint

It is important to perform all the physical manipulations in a quiet and gentle manner in order to carry out the examination safely without causing danger to the clinician or his assistants and to avoid disturbing the patient. This Restraining method is used morely for equine, cattle, Pet animal, sheep and goats.

- Training materials: open air clinic
- Live animals



- Material used: Rope, nose twitch, bull holder, crash etc.

Example of Procedure:

Restraints of the equine:

- Twitch is applied to the upper or lower lip or to the ear
- Nose twitch
- Lifting the fore-leg and hind-leg by unaided hands or with Leg twitch
- A loop of strong cord or soft rope is applied to the appropriate part
- Two ropes one-person horse casting
- Two ropes four persons horse casting

Restraint of the cattle:

- The nasal septum is gripped between the thumb and one finger or with 'bull-holder
- Leg twitches are also employed
- One rope locking two horns on a post or tree
- One rope two person cattle casting
- Two ropes three person cattle casting

Restraint of sheep and goat (Shoat):

- One person holds the neck of the sheep or goat by two hands
- One person stands beside the sheep or goat embracing the animal
- Small animals are restrained by placing them on a table in the upright, lateral or dorsal position

Pets animals:

- Placing them on a table in the upright, lateral or dorsal position
- In the dog a tape muzzle or a leather muzzle is used

Leash: The most common tool used to handle animals in the clinic is the leash. Placed around a dog's neck it normally controls even the largest dog. In the event a dog refuses to cooperate with a leash – carry him. Some dogs have never seen a leash and will freeze up to the sensation around a sensitive area like the neck. EVERY animal being transported or handled in the clinic must ALWAYS wear a slip-lead. This includes puppies, cats and sedated animals. It is too easy for a frightened animal to get loose and escape. Animals presented on leash/collar should be transferred to a slip lead and the leash returned to the client so that it is not lost during the animal's stay.



Your hand: A very effective form of restraint, your hands are sensitive to the amount of pressure that is being exerted on the animal and can be quickly modified to the situation. Hands can be used to gently stroke a dog or to firmly grasp a struggling cat. Although hands can be the most versatile, they are also the most vulnerable to injury. Recognizing when they would not be effective is very important.

Towels: A towel or blanket is a very useful tool for cats and small dogs. A towel can be used to decrease an animal's arousal by covering the head and body and can help protect from sharp claws.

Come-a-long or control pole: The control pole is used to safely handle extremely aggressive dogs. Used appropriately it is an effective tool. Inappropriate or unskilled use can cause serious injury to the animal. The control pole may further distress an upset animal and should only be used when the handler or other's safety is genuinely threatened. If an animal is aggressive enough to warrant the use of a control pole an experienced staff member should be consulted for assistance as the animal will also be evaluated for chemical restraint options.

Nets: The net is the primary tool used to handle fractious cats or wildlife. It allows for the safe handling and transfer of even the most aggressive small mammal. Effective use of the net requires some training and practice. If you need to handle a feral or fractious cat ask for assistance from a staff member.

Muzzles: Muzzles are used when a snappy or potentially aggressive dog must be handled. There are nylon muzzles and plastic basket available. A leash or strip of rolled gauze can be used as a temporary muzzle. Because dogs often try to remove a muzzle, it is important that the muzzle be placed securely. A weak or poorly made muzzle may lead to a false sense of security and the possibility of being bitten. Even with a securely placed muzzle, appropriate handling must be used to prevent injury from an animal that resists. Muzzles designed for cats extend up to cover the eyes, reducing visual stimulation. For some cats these can be very useful for calming the animal and helping to protect the handler from injury.



Figure 1: Muzzling techniques of dog by tools



Figure 2: Restraining of dog by manual

C. Chemical restraining

Anesthesia: For animals that are too aggressive or stressed to handle safely for procedures, sedation local and general anesthesia may be necessary to allow treatment. If you are unable to handle an animal, notify a staff member to determine whether sedation is appropriate. Drugs that is useful for this purpose includes: Acepromazine, Acetylpromazine, Chlorpromazine, Promazine and Trimeprazine; members of this group can be used in most species of animals.



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| Self-Check – 2 | Written test |
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Name..... ID..... Date.....

Directions: Answer all the questions listed below. Examples may be necessary to aid some explanations/answers.

Test I: Choice the correct answer

1. Which one is not the physical restraint?
A/ crush B/ Hobble C/ Owner sound "Sit" D/ All
2. Which restraining is the best one to manage a dog at clinic?
A/ Nets B/ Muzzles C/ Leash Pool D/ Nose twitch

Test: Short Answer Questions

1. Define restraint, handle and capture? (8 Points)
2. List at least the 4 major tool and equipment that used in restraint and handling? (5pts)
3. List and explain the types of restraint capture and handle of animal? (4pts)
4. What are the types of equines handling at clinics? (3pts)
5. Write the mainly used restraining and capturing equipment at clinics during clinical services? (14pts)

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Note: Satisfactory rating - 15 points Unsatisfactory - below 8 points

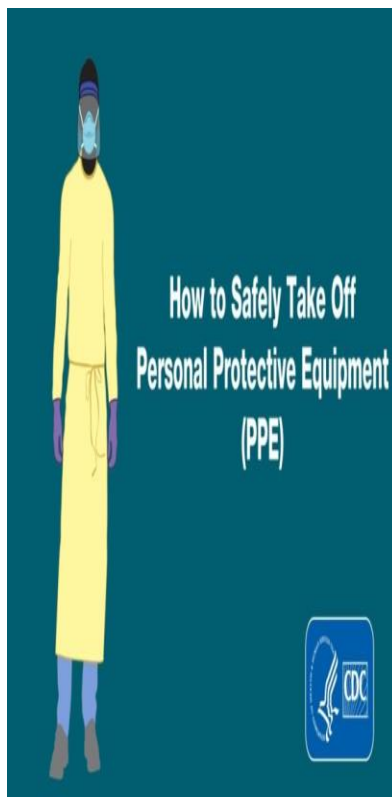
You can ask your teacher for the copy of the correct answers

Information Sheet 3- Using PPE at Animal Clinical Services

3.1 Using personnel protective Equipment

Personal protective equipment 'PPE' is equipment worn to minimize exposure to hazards that cause serious workplace injuries and illnesses. These injuries and illnesses may result from contact with chemical, radiological, physical, electrical, mechanical, or other workplace hazards. Personal protective equipment may include items such as Boots, hats/hard hat, overalls, gloves, protective eyewear, hearing protections (earplugs or muffs), respirator or face mask, sun protection (sun hat, sun screen), coveralls, vests, full body suits, and specialized gloves for conducting large animal examinations. PPE should fit comfortably, encouraging worker use. If the personal protective equipment does not fit properly, it can make the difference between being safely covered or dangerously exposed. When it is necessary:-

- What kind is necessary
- How to properly put it on, adjust, wear and take it off
- The limitations of the equipment
- Proper care, maintenance, useful life, and disposal of the equipment



Protective Clothing and Equipment for Handling of Bulk Caustic Soda Solution.

ALWAYS wear _____
Chemical Goggles

Chemical Protective Suit _____

ALWAYS wear _____
Chemical Resistant
Gloves

Transparent Face _____
Shield and Hard Hat

Pant Legs
OUTSIDE Boots _____

Chemical Resistant Boots _____





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| Self-Check – 3 | Written test |
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Name..... ID..... Date.....

Directions: Answer all the questions listed below. Examples may be necessary to aid some explanations/answers.

Test I: Short Answer Questions

1. Write the main uses of personal protective equipment at clinical services area? (5 Points).

2. List the major PPE in animal clinics? (12pts).

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Note: Satisfactory rating - 10 points Unsatisfactory - below 5 points

You can ask your teacher for the copy of the correct answers.



Information Sheet 4- Preparing work area for clinical activities

4.1 Prepare Work Area

Veterinary science is the art and science concerned with the health of animals and the treatment of injuries and diseases that affect them. Animal science means the study of the biology, growth, husbandry, and production of animals under human control. Veterinary science are able to examine animals, assess their environment and interview animal keepers, recognize signs of health and disease, identify common non-infectious and infectious diseases, including zoonosis, differentiate among similar diseases, evaluate injuries and support reproduction and herd health management.

4.2 Open-air clinic/stationary veterinary clinic

Open-air clinic/ stationary veterinary services fall into four main categories:

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

Veterinary services are another area where the economic classification of various components differs and is open to different interpretations. Clinical health services and the provision of veterinary drugs are the closest to being pure private goods. However, there can be positive externalities in treatment, particularly in the case of infectious diseases, that may justify some form of government intervention. It can be argued that preventive health services also justify either public provision, or at least financing by the totality of affected livestock owners, because of the externalities involved and the 'free rider' implications of charging individual farmers for services that others will benefit from. There are also moral hazard problems in the market for veterinary services, especially in the area of drug provision and hygiene inspection. These require the government to maintain a role in the provision of these types of services.

4.3 Mobile veterinary clinics

Mobile veterinary clinics have become increasingly popular due to strong demand from animal owners seeking the convenience of at-home animal services. Mobile Veterinary clinics utilize a motor vehicle equipped with special medical and surgical equipment to make house or farm calls. A variety of manufacturers make 18 to 30-foot vehicles (vans or trailers) that can be specially equipped for use as veterinary mobile units. Additionally, veterinarians are finding that this type of veterinary treatment center is much more affordable to open and operate than a stationary clinic.



4.4 Vet hospital

The main role of vet hospital was treatment patients, vaccinate, deworming, quarantined those infected zoonotic disease, sampling and laboratory analysis, control and eliminate those under risk animal.

4.5 Animal Hospitals and Veterinary Clinics Defined

On one hand, an animal hospital is a place where diagnosing or surgically treating animals takes place. It is a place operated and maintained by licensed veterinarians. Here, they perform surgeries and treat diseases and injuries of animals. Animals can choose to stay on the premises for treatment. A veterinary clinic, on the other hand, is a facility (usually a building or part of a building) that is responsible for providing prevention, cure, and alleviation of diseases and injuries to animals. The place can also be the shelter of animals during the treatment period, which includes provisions for their overnight accommodation.

When comparing clinics and hospitals, the first thing that comes to mind is the size of the facility. Hospitals are likely to be larger in physical size. The reason for that is because they provide more services. They have full-service facilities with more in-hospital capabilities and treatment options. They also have more space for sick animals to stay overnight. While clinics are not on the same scale as hospitals, they are part-service facilities that offer similar services. They focus on preventative veterinary medical care. They make the diagnosis. Some will refer patients to other hospitals, while others carry out diagnostic procedures. Most clinics' surgical services are limited to minor and preventative treatment.



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| Self-Check – 4 | Written test |
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Name..... ID..... Date.....

Directions: Answer all the questions listed below. Examples may be necessary to aid some explanations/answers.

Test I: Short Answer Questions

1. Why we prepared clinic area properly at clinical service area? (12Points)

2. Write the major tool available (used) at clinical services? (10pts)

Note: Satisfactory rating - 10 points Unsatisfactory - below 5 points

You can ask your teacher for the copy of the correct answers.



Information Sheet 5- Adopting and practicing safe work area

5.1 Work Area Safety

According to veterinarian slang '**Prevention is better than cure**'. So safety work area is the main concern during doing any work. **Safety is the state of being "safe"**, the condition of being protected from harm or other non-desirable outcomes. Safety can also refer to the control of recognized hazards in order to achieve an acceptable level of risk. Employers have the responsibility to provide a safe workplace. Effective safety and health programs (also known as injury and illness prevention programs) have been shown to reduce workplace injuries and illnesses and associated costs. Employers should develop a comprehensive written **safety and health program external icon** that addresses key elements:-

- Management leadership.
- Worker participation.
- Hazard identification and assessment.
- Hazard prevention and control.
- Education and training.
- Program evaluation and improvement.
- Communication and coordination for host employers, contractors, and staffing agencies.

Employers of veterinary medicine and animal care workers should:

- Develop and implement a comprehensive written workplace-specific safety and health program.
- Review and update the written safety and health program periodically.
- Document and maintain staff records of training, immunizations, and work-related injuries and illnesses.
- Comply with Federal and State occupational hazard laws.
- Comply with relevant Federal, State, and local laws such as proper veterinary waste management and disposal.
- Inform all workers and volunteers about potential workplace hazards.



- Promote safe work habits including best infection control practices.
- Have a medical surveillance system in place to record and report workplace-related injuries and illnesses.
- Ensure that equipment is maintained and operated safely.

A. Prevention Methods

One of the best ways to prevent and control workplace injuries, illnesses, and fatalities is to “**design out**” or **minimize hazards and risks** early in the design process. Prevention through design efforts in veterinary facilities and processes can protect workers and animals and be cost-effective.

- Consider safety in the design and construction of animal handling, restraint, housing and other veterinary facilities.
- Consider safety in the design of processes such as animal restraint and anesthetic gas control systems.

B. Control Methods

Personal protective equipment (PPE) is needed to adequately protect workers area from workplace hazards. PPE should be used only when other controls cannot effectively reduce hazardous exposures.

- **Elimination:** remove the hazard from the workplace
 - ✓ e.g., do not admit animals for which the facility is not properly equipped
- **Substitution:** switch to the use of a less risky hazard
 - ✓ e.g., switch to the use of safer chemical
- **Engineering controls:** prevent exposure to a hazard or place a barrier between the hazard and the worker
 - ✓ e.g., install an effective waste anesthetic gas scavenging system
- **Administrative controls:** implement changes in work practices and management policies
 - ✓ e.g., require rabies pre-exposure vaccination for workers at risk
- **PPE:** use gloves, safety eyewear, masks, hearing protection, respirators, or other protective equipment

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- ✓ e.g., require the use of hearing protection in an animal shelter with barking dogs

C. Worker Training

Veterinary medicine and **animal care workers** should be trained about hazards before they begin work. Refresher training should be conducted at regular intervals as required or as needed. Training should include information about the following:

- Potential workplace hazards.
- Occupational risks for pregnant and immunocompromised workers.
- Effective use of controls for reducing workplace exposures.
- Veterinary standard precautions including infection control practices.
- Safe handling, restraint, and care of animals.
- Preventing needle stick, scalpel, and sharps injury.
- Proper care and use of PPE.
- Prompt reporting of work-related injuries and illnesses.
- Emergency and evacuation procedures.



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| Self-Check – 5 | Written test |
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Name..... ID..... Date.....

Directions: Answer all the questions listed below. Examples may be necessary to aid some explanations/answers.

Test I: Short Answer Questions

1. Define the term 'Safety' clearly and precisely? (**5Points**)

2. Write the key elements of basic safety of clinical equipment before operate? (**8 pts**)

3. Write the main role of animal health and veterinarian work at clinical services? (**3pts**)

Note: Satisfactory rating - 12 points Unsatisfactory - below 5 points

You can ask your teacher for the copy of the correct answers.



Information Sheet 6- Checking basic safety on all equipment before operation

6.1 Safety of equipment during operation

Safety check is defined as rounding to make sure that the patients and the milieu (patients living quarters) is secured and free of harmful items that can be used to hurt someone. The purpose of an inspection is to identify whether work equipment can be operated, adjusted and maintained safely, with any deterioration detected and remedied before it results in a health and safety risk. Not all work equipment needs formal inspection to ensure safety and, in many cases, a quick visual check before use will be sufficient. However, inspection is necessary for any equipment where significant risks to health and safety may arise from incorrect installation, reinstallation, deterioration or any other circumstances. The need for inspection and inspection frequencies should be determined through risk assessment. Standard precautions are meant to reduce the risk of transmission of zoonosis and other pathogens from both recognized and unrecognized sources. They are the basic level of infection control precautions which are to be used, as a minimum, in the care of all patients.

- The technician follows the rule of basic safety before operating equipment such as:
- Follow the rule of operation according to their production industry
- Use PPE before use it
- Check whether it functional or not
- Organized according to kaizen use
- Check regular all equipment
- Know the duration of use and expired
- Teach other how it operates etc.

What you must do

You should inspect work equipment if your risk assessment identifies any significant risk (for example, of major injury) to operators and others from the equipment's installation or use. The result of the inspection should be recorded and this record should be kept at least until the next inspection of that equipment. Records do not have to be made in writing but, if kept in another form (eg on a computer), these should be held securely and made available upon request by any enforcing authority.



Work equipment that requires inspection should not be used, unless you know the inspection has taken place. Where it leaves your undertaking, or is obtained from another (eg a hire company) it should be accompanied by physical evidence of the last inspection, such as an inspection report or, for smaller items of equipment, some form of tagging, colour coding or labelling system.

What you should know

PUWER regulation 6 specifies the circumstances where inspection is required to ensure healthy and safe conditions are maintained:

- where the safety of work equipment depends on the installation conditions, it should be inspected after installation and before first use, and after reassembly at any new site / location
- At suitable intervals, where work equipment is exposed to conditions causing deterioration liable to result in dangerous situations
- each time exceptional circumstances (e. g major modifications, known or suspected serious damage, substantial change in the nature of use) are liable to have jeopardized the safety of the work equipment

What should the inspection cover?

This will depend on type of work equipment, its use and the conditions to which it is exposed. This should be determined through risk assessment and take full account of any manufacturer's recommendations. The advice of others, such as trade associations and consultants, as well as other sources like published advice on health and safety, may also be helpful. An inspection should concentrate on those safety-related parts which are necessary for the safe operation of work equipment and, in some cases; this may require testing or dismantling. However, not all safety-critical features on a particular item of work equipment may require inspection at the same intervals.

An inspection can vary in its extent, as the following demonstrate:

- Quick checks before use (e. g electric cable condition on hand-held power tools, functional testing of brakes, lights on mobile machinery)



- weekly checks (e. g presence of guarding, function of safety devices, tyre pressures, and the condition of windows, mirrors and CCTV on mobile plant)
- more extensive examinations, undertaken every few months or longer (e. g general condition of a ladder, close examination of a safety harness, portable appliance testing)

Records are not normally required to be made for the simplest pre-use checks. The use of checklists can assist but these, and the records made, should be tailored to the particular type of work equipment to minimize the burden to what is strictly necessary for safety. Requiring too much detail too often can lead to inspection activity becoming burdensome with the risk of a superficial 'tick box' approach or even, in some cases, the inspection activity ceasing altogether. You only need to inspect what is necessary for safety.

When should work equipment that needs inspection be re-inspected?

Work equipment which is exposed to conditions causing deterioration that could result in a dangerous situation should be inspected at suitable intervals, and after every event liable to jeopardize its safety. The frequency of inspection may vary, depending on environmental conditions (e. g equipment subject to harsh outdoor conditions is likely to need more frequent inspections than if used in an indoor environment).

The frequency of inspection should be determined through risk assessment, taking account of the manufacturer's recommendations, industry advice and your own experience. It may be appropriate to review the frequency of inspection in the light of your experience. Intervals between inspections can be increased if the inspection history shows negligible deterioration, or shortened where experience shows this is necessary to prevent danger.

Who should carry out the inspection of work equipment?

Equipment can be inspected by anyone who has sufficient knowledge and experience of it to enable them to know:

- what to look at
- what to look for
- what to do if they find a problem



The necessary level of competence will vary for inspections, according to the type of equipment and how / where it is used. The nature of these inspections does not have to be determined by the same person who undertakes them, provided the person determining them is competent. This can often be done in-house by experienced staff, taking account of:

- The manufacturer's recommendations
- Industry advice
- Their own experience of the equipment, its use, the particular factors of the workplace and the people using the work equipment



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| Self-Check – 6 | Written test |
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Name..... ID..... Date.....

Directions: Answer all the questions listed below. Examples may be necessary to aid some explanations/answers.

Test I: Short Answer Questions

1. How we can operate the basic clinical equipment in safe manner? (5Points)

2. Write the key elements of basic safety of clinical equipment before operate? (2 pts)

3. Write the main role of animal health and veterinarian work at clinical services? (1pts)

Note: Satisfactory rating - 10 points Unsatisfactory - below 5 points

You can ask your teacher for the copy of the correct answers.



Information Sheet 7- Preparing proper carcass disposal and incineration facilities

7.1 Disposing and Incinerating Carcass Properly

Carcass (Necrotic organ) is dead body of an animal. Producers may have losses due to disease, accidents, inter-animal competition or natural disasters such as flooding or blizzard. They need to think about mortality management before a death occurs to avoid having problems after the fact. The producer is responsible for disposing of these mortalities within 48 hours in an environmentally acceptable manner. Carcass abandonment is not considered an acceptable disposal practice. Safe disposal of carcasses is an important issue for day-to-day, routine management of livestock and poultry mortalities to prevent disease transmission and to protect air and water quality. Therefore, carcass disposal remains one of the major problems facing livestock and poultry producers. The proper carcass disposals are:

1. Incineration

Incineration is the thermal destruction of carcasses by auxiliary fuel such as propane, diesel or natural gas. Modern incinerators reduce carcasses to ash and generally are biosecurity. Incineration requires a great deal of energy, compared with other disposal methods, and is not considered a viable economic disposal option due to cost and labor.

2. Burial

Burial is a common method of carcass disposal to manage mortalities, but it poses a groundwater contamination risk if the burial site is not selected and managed properly. Therefore, selection and maintenance of a burial site is very important. For example, areas with sandy or gravelly soil and a shallow groundwater table must not be used as burial sites.

3. Rendering

Rendering is the process of converting animal carcasses to pathogen-free, useful byproducts such a feed protein. In the process of rendering, the carcasses are exposed to high temperatures (about 130 C or 265 F) using pressurized steam to ensure destruction of most pathogens. However, rendering poses biosecurity concerns due to



the transportation of livestock mortalities to multiple locations route to the rendering plant.

4. Composting

Composting is a naturally occurring process in which the dead animal is broken down into basic elements (organic matter) by microorganisms, bacteria and fungi. Composting has advantages over other methods of carcass disposal, including lower costs, easy-to-prepare piles and windrows created with available on-farm machinery, and lower risk of air and water pollution when done properly.

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| Self-Check – 7 | Written test |
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Name..... ID..... Date.....

Directions: Answer all the questions listed below. Examples may be necessary to aid some explanations/answers.

Test I: Short Answer Questions

1. Define what is carcass is? (**3 Points**)

2. List the major site of carcass disposed area in animal clinics? (**10 pts**)

3. How we can care the carcass disposing area in clinical services area? (**7 pts**)

Note: Satisfactory rating - 10 points Unsatisfactory - below 5 points

You can ask your teacher for the copy of the correct answers.



LG #78

LO#2- Carry out General Systemic Clinical Examination

Instruction sheet

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

- Recording detail case history
- Carrying out clinical examination of ruminants, swine, equine, camel, wild animals, companion animals and poultry
- Observing, recording and reporting abnormalities and behavioral changes of the animal
- Collecting samples
- Disposing clinical waste

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:**

- Record detail case history in consultation with the owner.
- Carries out clinical examination of ruminants, swine, equine, camel, wild animals, companion animals and poultry
- Observe, record and report abnormalities and behavioral changes of the animal
- Collect samples in accordance with the standard operating procedures.
- Disposing clinical waste in line with 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”. Try to understand what are being discussed. Ask your trainer for assistance if you have hard time understanding them.
4. Accomplish the “Self-checks” which are placed following all information sheets.
5. Ask from your trainer the key to correction (key answers) or you can request your trainer to correct your work. (You are to get the key answer only after you finished answering the Self-checks).
6. If you earned a satisfactory evaluation proceed to “Operation sheets
7. Perform “the Learning activity performance test” which is placed following “Operation sheets” ,
8. If your performance is satisfactory proceed to the next learning guide,
9. If your performance is unsatisfactory, see your trainer for further instructions or go back to “Operation sheets”.



Information Sheet 1- Record Detail Case History at Clinical services

1.1 Record Detail Case History

A record of a patient's background or medical history kept by a doctor or animal health technician. A record that shows a person's past illnesses, treatments, and other information for use by doctors. Records means writing, putting in save manure, well organized clinician data and other financial documents that are kept in an organized way. The best considered during keeping record is gather information about the history of sick animal from client or attendant. History is essential information about the circumstances of disease from the owner or the attendant of the patient. A case history is defined as a planned professional conversation that enables the patient to communicate its symptoms, feelings and fears to the clinician so as to obtain an insight into the nature of patient's illness & its attitude towards them.

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.

1.2 History Taking

Disease problems in animal health are invariably presented to the clinician through the medium of the owner's complaint, which is a request for professional assistance. For completeness and accuracy of history taking, the following points should be well considered (Patient data, Immediate/present history, past history, Management and Environment history). Conditions to be considered at history taking:

1. The words or expressions that are used should be understandable to the client.
2. The clinician should check the validity of the history by detailed systematic examination.
3. Leading questions should be avoided.
4. The clinician should exhibit friendly manner with the owner to keep him confident

Patient data

This data is essential for accurate identification of the patient and includes:

- Owner's name
- Owner's address, postal address, telephone, kebele, peasant association, etc.
- Species, breed, sex, age, name, ID No., body weight, etc.



- Description including color, marking, polledness, and other identification marks of patient.

There are three types of animal patient history. These are:-

A. Present history

This relates to the sequence of events associated with the period of time that the animal has been ill. Points to be focus in present history are:

- **Duration of the disease:** whether it is per acute, acute, subacute or chronic
- **Clinical sign/symptoms:** (appetite for food or drink, defecation, urination, respiration, sweating, physical activity, milk production, growth, gait, posture, voice, odour, etc.)
- **The number of animals affected:** (morbidity rate and mortality rate)
- **Treatment given:** determine whether any treatment has, in fact, been given before calling for assistance

Duration of illness: it includes whether the course of the disease is:

- **Per acute:** ranging from few hrs to two hrs.
- **Acute:** ranging from 3 hrs to 14 days
- **Sub-acute:** ranging from 2 weeks to 4 weeks.
- **Chronic:** if the course of disease is greater than 4 weeks.

B. Past history

In this respect, information should be obtained relating to the nature and timing of any previous illness which had affected the individual animal or group.

- Details regarding clinical features, diagnosis, treatments, morbidity and mortality rates, post mortem observations, laboratory test etc., should be obtained
- Ascertain the system of animal replacement on the farm or in the home.
- If animal introduced from outside sources, further enquiries should be made concerning the health history and status of the source animals.

C. Management and environmental history

The examination of an animal must be accompanied by a consideration of its surroundings and circumstances. **Management:**

- Nutrition,
- Livestock at pasture
- Drinking water
- Feeding methods/practice
- House space, satisfactory ventilation
- Proper management of milking cow and milking machine to avoid udder injury
- Breeding and Reproductive history



- Stocking rate/population density

D. Environmental

- Topography
- Environmental Hygiene
- Soil type
- An excessive buildup of feces and urine
- Ground surfaces
- Quality of Floor
- Climatic conditions



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| Self-Check – 1 | Written test |
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Name..... ID..... Date.....

Directions: Answer all the questions listed below. Examples may be necessary to aid some explanations/answers.

Test I: Short Answer Questions

1. List the main recorded data at clinics accurately? (4 Points)

2. Define history? (3 pts)

3. What the types of case history and explain their precisely?

A. _____

B. _____

C. _____

4. Write the purpose of case paper in clinics? (8pts)

5. Write the types of disease

Note: Satisfactory rating - 10 points Unsatisfactory - below 10 points

You can ask your teacher for the copy of the correct answers.

Answer Sheet

| |
|---------------|
| Score = _____ |
| Rating: _____ |

Name: _____ Date: _____



Information Sheet 2- Care out Clinical Examination of Ruminants, Swine, Equine, Camel, Companions and Poultry

2.1 General clinical examination

Clinical examination is a fundamental part of the process of veterinary diagnosis. It provides the veterinarian with the information required to determine the disease or diseases producing the clinical abnormalities. In addition, the information derived from the clinical examination should assist the veterinarian in determining the severity of the pathophysiological processes present. Without a proficient clinical examination and an accurate diagnosis, it is unlikely that the treatment, control, prognosis and welfare of animals will be optimized.

The organs or systems involved, the location, 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. 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 practical veterinary diagnostic of clinician approach are as the following:

- Guide to how to handle the animals and the methods of restraining of animals
- It helps to understand and know the procedure of clinical diagnostic, how to take history
- To understand the general and systemic examination of domestic animals
- Having knowledge of how to examine, treat and identified the complex disease of animas.
- It guides to give knowledge on how to prepare and administration of veterinary drugs

Clinical Examination of the Patient may divided in to two categories.

1. General physical examination

The main objective of apply general inspection, palpation, percussion and auscultation methods used to detect clinical signs of abnormalities. Physical examination can be carried out by taking vital sign such as; Temperature rate, Pulse taking, Respiration rate, Capillary Refill Time (CRT), Physical body condition, Normal demeanor, abnormal demeanor.



A. Temperature taking

Temperature is the measure of how hot or cold the animal body is. The body temperature is taken using a mercury or digital electronic thermometer placed carefully into the rectum. The thermometer should be lubricated before insertion and checked (in the case of a mercury thermometer) to ensure that the mercury column has been shaken down before use. It should be held whilst it is in the rectum. Sudden antiperistalsis movements in the rectum may pull the thermometer out of reach towards the colon. The thermometer is left in position for at least 30 seconds; the clinician should ensure the instrument is in contact with the rectal mucosa, especially if a lower than expected reading is obtained. The thermometer must be cleaned after removal from the patient. It must not be wiped clean on the patient's coat. If the animal's temperature is higher or lower than anticipated it should be checked again.

Procedure of recording temperature

- Using live animals, thermometer and lubricant (Soap or petroleum jelly), antiseptic
- The places, which can be used to take temperature, are rectum or vagina (approximately 0.5 degree centigrade higher in vagina).
- The thermometer should be sterilized by disinfectant (antiseptics) before use.
- It should be well shaken before recording of temperature to bring the mercury column below the lowest point likely to be observed in different species of animals.
- The bulb end of the thermometer should be lubricated with liquid paraffin or glycerin or soap especially in case of small pup and kitten.
- Insert the thermometer in a rotational way and gentle manner. Care should be taken so that the bulb of the thermometer remains in contact with the rectal mucous membrane.
- The thermometer should be kept in site for at least 3-5 minutes.
- Pull out the thermometer, clean it and read the number.

Evaluation: Read the value to define and explain a state of fever, hypothermia, and febrile or non-febrile animals.

Interpretation of thermometer

Thermometer reading will reveal if the temperature of animal being examined is normal, above normal (fever) or below normal (subnormal). Based on this finding action taken will vary. Fever: denotes the elevation of body temperature of animal above normal. It is a general reaction of animal and human body to the action of infectious agents like bacteria, virus, parasites and exogenous substances like bacterial toxins. Sign of fevers are Animal will refuse to eat either completely or partially (anorexia), hair on the body might be seen standing up, dullness, and dry muzzle. Fever management: There are preparations to reduce temperature. Preparations like paracetamol, Phenylbutazone is normally given to control fever. The temperature of animal may sub-divide as:-

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Hypothermia

The temperature of animal drops below normal and this occurs when animals get exposed to extreme cold for example when a calf is exposed to heavy rain, when animal is in shock and a clinical condition like milk fever. Here the animal body is unable to regulate body temperature or the heat regulatory mechanism fails to generate heat to compensate the heat loss from the body. *Signs of hypothermia:* Shivering, chattering of teeth, cold extremities and skin on touch, and reduced pulse and respiratory rates are observed.

Hypothermia management

Place the affected animal in warm place or provide shelter to protect from rain, rub extremities and apply liniments if available, provide warm porridge if animal has appetite, inject warm DNS / NS, inject calcium preparations in the case of milk fever the temperature will automatically rise.

Hyperthermia

The condition of having a body temperature greatly above normal. A dangerously overheated body, usually in response to prolonged hot, humid weather. Hyperthermia occurs when the body's heat-regulating mechanisms don't work effectively. Older age, certain illnesses and medication increase the risk of developing hyperthermia. A temperature of 40°C (104°F) or higher is life-threatening. Confusion, nausea or vomiting, and rapid breathing are some symptoms.

B. Pulse taking

Pulse can be adapted from the number of heart beats per minute by using stethoscope in less manageable animals. The rhythm of pulse should also be noticed while taking pulse. Pulse is defined as the regular expansion and contraction of the arterial wall caused by the flow of blood through it at every heartbeat. Pulse gives information with regard to the cardio-vascular abnormalities. It is influenced by exercise, excitement, annoyance, relative humidity, environmental temperature. Pulse can be adapted from the number of heart beats per minute by using stethoscope in less manageable animals. The rhythm of pulse should also be noticed while taking pulse. The pulse rate can rise rapidly in nervous animals or those which have undergone strenuous exercise. In such cases the pulse should be checked again after a period of rest lasting 5 to 10 minutes.

Procedure of pulse taking

- Using live animal, stethoscope and watch
- Place the digits on the artery to be examined
- Applying gentle pressure until the pulse wave can be detected

NOTE: the pressure or pulsation of the arteries felt on the finger digits. It is useful to be able to find out how fast the heart is beating. For example, it can help you decide whether colic is serious. An adult horse's heart beats more slowly than ours, especially when the horse is fit. It takes practice to find the pulse. There are several places where it can be felt. Using a watch with a second hand, count how many beats can be felt in a minute.

Table 2: Site of pulse taking in domestic animals

| No. | Animals | Site of pulse taking |
|-----|----------------------|---|
| 1 | Equine | External maxillary artery Transverse facial artery Median artery Great metatarsal artery |
| 2 | Cattle and pig | Middle coccygeal artery Facial artery Median artery |
| 3 | Sheep, Goat, Calf. | Femoral artery. |
| 4 | Piglet, Dog and Cat. | Femoral artery. |

Table 3: Normal Range of pulse rate in animals

| No | Animals | Pulse rate/minute |
|----|-------------------|-------------------|
| 1 | Cattle | 60– 90 |
| 2 | Young calves | 100-120 |
| 3 | Horse | 28– 42 |
| 4 | Foal up to 1 year | 70-80 |
| 5 | Sheep | 68- 90 |
| 6 | Goat | 68- 90 |
| 7 | Pig | 60- 90 |
| 8 | Dog | 90- 130 |
| 9 | Cat | 110- 130 |
| 10 | Chicken | 200- 400 |



Factors influencing pulse

- **Species:** different species of animal have different pulse rate, which is number of rise and fall of arterial wall per minute.
- **Size:** higher in small than in large animals.
- **Age:** higher in young than adult animals.
- **Sex:** male slightly lower than female animal.
- **Parturition & Late stage of pregnancy:** relatively more pulse rate
- **Exercise:** increase pulse rate.
- **Ingestion of food:** cause momentary increase in frequency of pulse.
- **Posture:** pulse rate reduced about 10% when animal is recumbent than when standing

C. Respiration Rate

The respiration rate is measured through counting of either contraction or expansion of the thorax and abdomen which can be observed during clinical examination. Any change in the rate indicates respiratory involvement. Thoracic respiration is seen in animals suffering from acute peritonitis and abdominal respiration in pleurisy. Double expiratory movements are seen in emphysema in horses.

Method: The respiration rate is measured through counting of either contraction or expansion of the thorax and abdomen which can be observed during clinical examination.

Procedure

A method for respiration rate taking using live animals, stethoscope, watch, gloves and crash includes:

- **Inspection:** Stand behind and to one side of the animal, and observe the movement of the thoracic and abdominal areas of the body.
- **Palpation:** Put one hand in front of the nostril, feel the exchange of the gas; or put one hand on the lung area or the thorax and feel the respiratory movements.
- **Auscultation:** Use stethoscope, listen to the respiration sound in the trachea or lung area.

Types of respiration

I. Costal respiration: In this type of respiration thoracic muscles are mainly involved and the movement of the rib cage is more prominent. It is seen in dogs and cats.

II. Abdominal respiration: This type of respiration is seen in ruminants viz cattle, goat, sheep and yak. Here the abdominal muscles are involved and movement of the abdominal wall is noticed.

III. Costo-abdominal respiration: In this type of respiration muscles of both thorax and abdomen are involved so the movement of the ribs and the abdominal wall are noticed. The respiration rate is measured through counting of either contraction or expansion of the thorax and abdomen which can be observed during clinical examination. Inspiratory or expiratory movements of the chest wall or flank can be counted. In cold weather, exhaled breaths can be counted. If the animal is restless the clinician should count the rate of breathing for a shorter period and use simple multiplication to calculate the respiratory rate in breaths/minute. Mouth breathing is abnormal in cattle and is usually an indication of very poor lung function or a failing circulation.

Table 4: The respiratory rate of domestic animal per minute.

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

D. Mucous membrane

The mucous membrane in the eyes, mouth and vagina in the case of females can be examined to determine the health status of an animal. Examination of the mucous membrane should be done in natural light (sunlight) not in the lamplight.

Table 5: The normal colour of different species of animal is listed below table

| No. | Animal | Colour of mucous membrane |
|-----|------------------------|---------------------------|
| 1 | Cattle, sheet and goat | Pale pink |
| 2 | Horse | Pale roseate |
| 3 | Pig | Reddish |
| 4 | Dog | Pale roseate |
| 5 | Cat | Pale pink |



The abnormalities of color of mucous membrane are caused by different factors like Pallor of the mucous membranes may indicate anaemia caused by direct blood loss or by haemolysis, A blue tinge may indicate cyanosis caused by insufficient oxygen in the blood, A yellow color is a sign of jaundice, the mucosae may be bright red in febrile animals with septicaemia or viraemia, Bright red coloration of the conjunctiva is often seen, for example, in cases of bovine respiratory syncytial virus infection. A cherry-red colouration may be a feature of carbon monoxide poisoning. A greyish tinge in the mucosae may be seen in some cases of toxemia such membranes are sometimes said to be 'dirty'. High levels of methaemoglobin, seen in cases of nitrate and/or nitrite poisoning, may cause the mucosae to be brown colored. The color of mucous membrane may change occurs in various diseases as follow by the following:

1. Anaemic mucous membranes

- Blood loss anaemia.
- Parasitic infestations leading to haemolysis
- Tumors or leucosis
- Iron deficiency anemia
- Long-standing infectious diseases
- Exposure to X-rays and some medications

2. Congested mucous membranes

- High environmental temperatures and exercise
- Any disease resulting in fever
- Diseases of the heart, brain and its membranes.

E. Capillary Refill Time

Capillary refill time (CRT) is defined as “time required for return of color after application of blanching pressure to a distal capillary bed. This is taken by compressing the mucosa of the mouth or vulva to expel capillary blood, leaving a pale area, and recording how long it takes for the normal pink colour to return. In healthy animals, the CRT should be less than 2 seconds.

Methods how to examine mucous membrane by capillary refill time as follow:

- This is taken by compressing the mucosa of the mouth or vulva to expel capillary blood, leaving a pale area
- Recording how long it takes for the normal pink color to return.
- In healthy animals, the CRT should be less than 2 seconds.
- A CRT of more than 5 seconds is abnormal, and between 2 and 5 seconds may indicate a developing problem
- An increase in CRT may indicate a poor or failing circulation causing reduced peripheral perfusion of the tissues by the blood.



F. Physical Body Condition

Body condition scoring is an important management practice used by producers as a tool to help optimize production, evaluate health, and assess nutritional status. Different scores can be given for individual animal and can further classified as normal, fatty, lean/thin, emaciation.

Condition Score 1: Very thin: This animal's skeletal structure is very prominent. Notice the deep depressions next to the spine, between the pelvis and rib cage, between the hooks and pins, and around the tail head.

Condition Score 2: Thin: The animal's skeleton is still very apparent. The individual spinous processes are clearly visible, but there is a small amount of fat tissue over the spine, hooks, and pins.

Condition Score 3: Medium (Normal body condition): The animal appears smooth over the spine, ribs, and pelvis and the skeletal structure can be easily palpated. The hooks and pins are still discernible, with a moderate, rather deep depression between the pelvis and rib cage, hooks and pins, and around the tail-head.

Condition Score 4: Fat: There are no spinous processes detectable, and no depression in the loin area, which gives the top-line of the animal a flat, tabletop appearance. The ribs can no longer be felt, and the pelvis can only be felt with firm pressure. The hooks and pins have a rounded appearance due to areas of fat covering.

Condition Score 5: Very Fat: The animal appears rounded and smooth with a square-shaped appearance, because of the amount of fat filling in the loin. The skeletal structure is no longer visible, and can only be palpated with excessive pressure.

G. General Demeanor

When, on being approached, an animal makes a normal response to external stimuli, such as movement and sound, the demeanor is said normal (bright). Normal reaction under these circumstances may consist of elevating the head and ears, turning towards and directing the attention at the source of stimuli, walking away and evincing signs of attack or flight. Abnormal demeanor: Behavioral change/ response to external stimuli. The Abnormal demeanors in domestic animals are as follow:-

- **Decreased response** (depression): dull (apathetic); dummy state; comma.
- **Excitation or increased response:** apprehension (mildly anxious); restlessness; mania; frenzy.

H. Posture: It denotes the anatomical configuration when they remain in stationary situation. How does it stand? How does it sit? How does it lie?

I. Gait: It indicates about the locomotor process of an animal.

J. Body conformation: Shape and size of the different body regions relative to other regions.



2. REGIONAL OR SYSTEMIC EXAMINATION

A. Clinical Examinations of the head and neck region

Before handling the head a further visual inspection and observation of the head and neck is advisable as whether the following question are present:

- Movements of head and neck – normal or abnormal
- Carriage of head – normal or tilted,
- Can the animal see?
- Can the animal hear?
- Ocular or nasal discharge,
- Salivation – normal or excessive,
- Ability to prehend, masticate and swallow food
- Mobility of the neck.
-

The perspective of this examination is to identify pale and discolored mucous membranes; assess problems of oral cavity and deranged appetite. The following points are to be considered:

- Visible mucous membrane
- Eyelids, conjunctivae and eye
- Nasal regions and nasal mucous membrane
- Prehension, mastication and deglutition
- Salivation
- Teeth eruption

Procedure

- Visible mucous membrane examined by visual inspection to note the presence of lesions, discharge, glaucoma, nystagmus.
- Examine the nose and nasal sinuses; lesions, discharges should be noted by percussion, palpation
- Examine the mouth and appetite; oral lesions, salivation, feed intake should be noted. The rigidity of tetanus, the cunning leer or maniacal expression of rabies and acute lead poisoning are cases in point.

The symmetry and configuration of the bony structure should be examined. Doming of the forehead occurs in some cases of congenital hydrocephalus and in chondrodysplastic dwarfs, and in the latter there may be bilateral enlargement of the maxillae. Swelling of the maxillae and mandibles occurs in osteodystrophia fibrosa; in horses swelling of the facial bones is usually due to frontal sinusitis; in cattle enlargement of the maxilla or mandible is common in actinomycosis. opisthotonos is an



excitation phenomenon associated with tetanus, strychnin poisoning, acute lead poisoning, hypomagnesemic tetany, polioencephalomalacia and encephalitis.

B. Examination of skin and appendages

The skin provides protection against minor physical injuries supports hair growth and offers some defence 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 skin to become abnormally dry and inflexible and less able to perform its.

The perspective point to assessing the condition of skin and coat to identify clinical signs 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.

Procedure: Examine the skin and coat: grasp the skin of the upper part of the body and notice the elasticity, visual inspection of the condition of the coat and presence of skin lesions should be noted. The abnormalities which occurred from skin due to diseases.

C. Examinations of the thoracic cavity

Examination of the thoracic cavity guide to show the regional anatomy of the lungs and the heart, and perform physical examination of the lung and the heart area. Regional anatomy of the lungs -locate the lung area. The lung is located on the external surface of the thoracic region by forming an imaginary triangle by using the points at the angle of the scapula, olicranun process and the second intercostal space from the last.

- Physical examination of the thorax (lung area)
- **Inspection** -note respiratory movements



- **Palpation** -check the presence of pain by applying pressure
- **Percussion** -notice resonant sound
- **Auscultation** -note bronchial sounds (trachea and anterior part of the lungs) and alveolar sounds

Palpation: Chest palpation can be useful to identify thoracic pain which may be caused by rib fractures and pleuritic. Gentle pressure should be applied to the thorax using the palm of the hand and the animal observed for a pain response. The entire thorax should be explored in a systematic manner to identify focal areas of pain. In addition to pain, subcutaneous emphysema may be detected as a spongy sensation which may be accompanied by crackling noises. This clinical sign is sometimes seen in outbreaks of respiratory syncytial virus (RSV) and is caused by rupture of emphysematous bullae in the lungs.

Auscultation: During auscultation, the stethoscope should be moved systematically to cover the whole of thoracic lung fields with the aim of identifying any abnormal sounds present, their location and their occurrence in relation to the respiratory cycle. The location of an abnormal sound is deduced from the position of maximal intensity. Particular attention should be given to the apical lobe if bacterial pneumonia is suspected or the diaphragmatic lobe if lungworm is suspected.

D. Regional anatomy of the heart -locate the heart area

The heart is suspended by great vessels and located on the left median mediastinum of ventral thorax. The left side of the heart apex reaches the chest wall. After locating the heart the following should be noted through physical examination (palpation, percussion, auscultation) the following would be examined.

- Heart rate
- Abnormal variation in heart rate
- Heart sounds
- Normal heart sounds (dub-lab)
- Adventitious heart sounds (murmurs)
- Pericardial frictional sounds
- Venous pulsation (jugular pulsation)

Table 6: Anatomical location heart in equines and ruminants

| Area | Equines | Ruminants |
|------------------|--|-----------------------------|
| Base | From 2nd to 6th intercostal space | From 3rd to 6th rib |
| Apex | Half an inch from the last sternal segment | One inch from the diaphragm |
| Posterior border | Opposite to the 6th rib | Opposite to the 5th rib |
| Left surface | Composed of left ventricle and extends from 3rd to 6th rib | Extends from 3rd to 4th rib |
| Right surface | Extends from 3rd to 4th rib | Not examined |

E. Clinical examinations of the abdominal and associated digestive organs

Objective: to undertake clinical examination of the abdomen and identify disturbances of the digestive system. The examination of abdominal of ruminant as following:

The examination of rumen: The examination of rumen is performed by inspection, palpation, percussion and auscultation; stomach tube can be used as well. In bloat case, the left side would be bulged, and the motility would be decreased.

The examination of reticulum: TRP by back grasp, below pole lifting, up and down hill leading, hand palpation

The examination of omasum: done by exploratory puncture. The examination of the displacement of abomasum is done by inspection, palpation, and auscultation. The disorder of stomach can be detected by taking stomach contents sample: Insert the stomach tube or nasal tube after cleaning, disinfecting and lubrication or trocarisation.

F. Rectal examination of the internal abdominal structures

Cut and smooth the nail; wear shoulder long glove; lubricate; cone shape of the fingers; insert in rotating way; notice: the hand cannot open, or even grasp organs inside. It's necessary or possible to use tranquilizer to reduce the sensitivity of the rectum in horse. In bloat case, the pressure in the abdomen would be very high, so it would be difficult to insert the hand inside. Absence of movements occurs in the following:

- Severe dilation of the rumen with gases (tympany) or with food (impaction).
- Toxic conditions.
- The quality could be described as strong in healthy animals, weak in cases of ruminal atony and very strong as in early stages of digestive disorders such as tympany and vagus indigestion with hypermotility.



G. Clinical Examinations of the Feces

Objective: To see Character of the feces and abnormal constituents in feces

Procedure:

- Observe the surface of the faeces, where mucus and blood always exists
- The colour of the faeces surface, the odour of the feces
- Fishy smell generally indicates bleeding, and abnormal constituents in feces

H. Examination of the urogenital system

Objective: To identify the regional anatomy, undertake clinical and physical examination of urinary system and assess urinary abnormalities, perform clinical examination of female and male reproductive organs as well as the mammary glands and teats. Identify the anatomic structure of the kidney on live animal: the left kidney is located ventral of the transverse process of the 3rd to 5th lumbar vertebrae. The kidney can be examined by inspection, external palpation, rectal palpation, and urianalysis. The examination of the urinary bladder is performed by stimulating the sense of urination from the lower part between the two hind legs on small animals or rectal palpation on large animals. Attention should be paid to the paralysis of the bladder and retention of urine and rupture. Clinical examination of male genital organs- visual inspection and palpation are employed to examine the testes, prepuce and the penis after withdrawing from the prepuce, orchitis, cryptorchidism, scrotum hernia, obstruction of urethra by calculi, phimosis, paraphimosis, inflammation of the prepuce, testes and penis are noted.

G. Clinical examination of female genital organs

Visual inspection and palpation of the vaginal region, use of vaginal speculum to examine the inside of vagina and intra-rectal examination of the cervix, uterus and ovaries would be performed:

- Take the sample of urine examine through physical methods
- Fresh urine is collected with test tube after stimulating urination by palpating the perennial region or by inserting catheter
- Clinical examination of the mammary glands and teat- inspection and palpation to detect the presence of swelling and lesions on the teats/decrease in size and shape, any discharge, temperature of the udder, consistency, and pain reactions are performed
- Clinical examination of milk samples: after collecting the milk samples in clean test tubes one can apply different physical and laboratory examinations
- For the gross examination of the milk, the change of the color, odor, viscosity and flakes in the milk should be identified.



Other systemic examination that used may

- **Examinations of the nervous and musculoskeletal system:** - For examination and detection of clinical signs of various problems associated with the nervous and musculoskeletal systems.
- **Examination of skeletal muscle of an animal:** - The musculoskeletal system is composed of the bones of the skeleton, joints, ligaments, muscles and tendons.
- **Gait:** - Gait is denotes the locomotor processes of the animals. A locomotor disturbance of the animal is judged by the movements (Walking, running, trotting, circling etc.) There are certain diseases, which interfere with the process of locomotion.
- **Examination of superficial lymph nodes of animals:** - to compared each paired node for size and consistency with the contralateral node.
- **Anatomical Location of lymph-nodes (LN):** Lymph nodes are round or bean-shaped structures that are widely distributed throughout the body. Imbedded in connective tissue or fat, they are concentrated in the cervical, axillary, and inguinal regions – the neck, armpits, and groin, respectively. They are typically less than $\frac{1}{2}$ inch in length, depending on the size of the animal.



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| Self-Check – 2 | Written test |
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Name..... ID..... Date.....

Directions: Answer all the questions listed below. Examples may be necessary to aid some explanations/answers.

Test I: Short Answer Questions

1. Write how we can take temperature from patient during examination? **(5pts)**

2. What are the differences between physical and systemic examination? **(3pts)**

3. List atleast the 5 factor that affect animal body temperature? **(2pts)**

4. Bure body temperature is taken from rectal is 38.5⁰C. If the bure rectal damage by hyena bites where the common mucous membrane is that temperature is taken and how is it? **(8pts)**

Test II: Choice the best answer

1. Which one of the following is the smallest size of needle? **(9pts)**

A/ 16 guage B/ 10 guage C/ 21 guage D/ 25 guage

2. During examination of animal pain, consistency shape by touching with hand is called? **(12pts)**

3. A/ Percussion B/ Palpation C/ percussion D/ Auscultation

Note: Satisfactory rating - 18 points Unsatisfactory - below 10 points

You can ask you teacher for the copy of the correct answers.

Answer Sheet

| |
|---------------|
| Score = _____ |
| Rating: _____ |

Name: _____ Date: _____



Information Sheet 3- Observing, recording and reporting abnormalities and behavioral changes of the animal

3.1 Observe, record and report abnormality

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

- Symptoms of reproductive health problems include bleeding or spotting between periods; itching, burning, or irritation genital area; pain or discomfort during sex; heavy or painful menstrual bleeding; severe pelvic/abdominal pain
- Unusual vaginal discharge; feeling of fullness in the lower abdomen; and frequent urination or urinary urgency
- Symptoms of breast problems include nipple discharge, unusual breast tenderness or pain, breast or nipple skin changes, or lump or thickening in or near breast or in the underarm area.
- Symptoms of lung problems include coughing up blood, shortness of breath, difficulty breathing, chronic cough, repeated bouts of bronchitis or pneumonia, and wheezing
- Symptoms of stomach or digestive problems include rectal bleeding, blood in the stool or black feces, changes in bowel habits or not being able to control bowels, constipation, diarrhea, heartburn or acid reflux, or vomiting blood.



- Symptoms of bladder problems include difficult or painful urination, frequent urination, loss of bladder control, blood in urine, waking frequently at night to urinate or wetting the bed at night, or leaking urine.
- Symptoms of skin problems include changes in skin moles, frequent flushing and redness of face and neck, jaundice, skin lesions that don't go away or heal, new growths or moles on the skin, and thick, red skin with silvery patches.
- Symptoms of muscle or joint problems include persistent muscle pains and body aches that are persistent, for example, numbness or tingling; pain, tenderness, stiffness, swelling, inflammation, or redness in or around joints; and decreased range of motion or loss of function of any joints or muscles.
- Symptoms of emotional problems include anxiety, depression fatigue, feeling tense, flashbacks and nightmares, disinterest in regular activities, suicidal thoughts, hallucinations, or delusions.
- Symptoms of headache problems (not including everyday tension headaches) include headaches that come on suddenly, "the worst headache of your life," and headache associated with severe dizziness, nausea, vomiting, and inability to walk.
- Symptoms of eating or weight problems include extreme thirst, dehydration, excessive hunger, losing weight without trying, bingeing, vomiting, starvation, preoccupation with food and weight, distorted body image, compulsive exercise, abuse of laxatives or diet pills, and depression.

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

- References Number Of Patients
- Brand (Tattooing)
- Date
- History Of Patient
- Species
- Diagnosis
- Sex
- Sample Taken



- Age
- Treatment And Drug Administrated
- Tentative Diagnosis
- Breed of Animal
- Diseases Suspected and Tests Requested
- Identity (If Available) of the Animals sampled
- The Vaccination Status of the Animals (If Known) and etc.



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| Self-Check – 3 | Written test |
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Name..... ID..... Date.....

Directions: Answer all the questions listed below. Examples may be necessary to aid some explanations/answers.

1. Define abnormality at clinic with the clinical concept? (3pts)

2. When behaviors change occurred in animal? (2pts)

3. Write an example of behavior change at clinic?(1pts)

Note: Satisfactory rating - 15 points Unsatisfactory - below 8 points

You can ask your teacher for the copy of the correct answers

Information Sheet 4- Collecting samples

4.1 Collect Sample from Clinics

Specimen means an individual animal, plant, piece of a mineral, e.t.c used as an example of its species or type for scientific study or display or used to refer humorously to a person or animal. E.g. Blood, pus, urine, milk, feaces, skin, ectoparasite, etc. Specimen collection is the process of obtaining tissue or fluids for laboratory analysis or near-patient testing. It is often a first step in determining diagnosis and treatment. There are four steps involved in obtaining a good quality specimen for testing: (1) preparation of the patient, (2) collection of the specimen, (3) processing the specimen, and (4) storing and/or transporting the specimen. Clinical samples are mainly distinguished in two types: solid or liquid. Solid samples include pieces of tissues harvested during biopsies or surgery, skin scraping, external parasite, feaces, skin, and can be either fresh or fixed in a fixative. Liquid samples include bodily fluids such as blood, urine, pus, saliva, preputial wash, vaginal discharge, milk, ear wax and etc.

Blood samples can be collected from blood vessels (capillaries, veins, and sometimes arteries) by trained phlebotomists or medical personnel. The sample is obtained by needle puncture and withdrawn by suction through the needle into a special collection tube.





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| Self-Check – 2 | Written test |
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Name..... ID..... Date.....

Directions: Answer all the questions listed below. Examples may be necessary to aid some explanations/answers.

1. What is specimen means? **(1 pts)**

2. Write the types sample collected from clinic? **(10 pts).**

3. Write atleast the 4 steps of obtaining ascetic sample from clinic? **(4pts).**

Test I: Choice the correct answer

1. Which one is equipment not used to collected sample? **(3 pts)**

- A/ Mortar and Pestle B/ Petridish C/ Chinese plastic bag D/ None

2. Which sample is not collected from clinic easily? **(3pts)**

- A/ Nets B/ Muzzles C/ Leash Pool D/ Nose twitch

Note: Satisfactory rating – 16 points Unsatisfactory - below 5 points

You can ask your teacher for the copy of the correct answers



Information Sheet 5- Disposing Clinical Waste

5.1 Clinical waste is the term used to describe waste produced from healthcare and similar activities that may pose a risk of infection, for example, swabs, bandages, dressings etc. or may prove hazardous, for example medicines. Healthcare waste is a by-product of healthcare that includes sharps, non-sharps, blood, body parts, chemicals, pharmaceuticals, medical devices and radioactive materials. Correct clinical waste disposal also ensures health and safety of staff, visitors and patients who should be protected from dangerous exposure to medicine, contaminated equipment and sharps. Incineration the destruction of something, especially waste material, by burning. Incineration is the most widely used clinical waste area in clinics and Vet hospital. Incineration is the most widely used waste treatment method to treat hazardous health care waste before the final disposal particularly in most developing countries. Disposing incinerator ash is commonly disposed of in burial pit or open dumping.

5.2 Waste Management

The term 'Waste Management' collectively means the management of waste from its inception to the final stage of disposal. Thus, as one single unit, it encompasses right from the collection, disposal, recycling, to which the processes of monitoring and regulation, respectively belong to, along with the legal frameworks that enable the occurrence of waste management. It also encompasses the legal and regulatory framework that relates to waste management encompassing guidance on recycling.

5.3 Types of Waste Management

- Landfills
- Incineration/Combustion
- Recovery and Recycling
- Plasma gasification
- Composting
- Waste to Energy (Recover Energy)
- Avoidance/Waste Minimization

5.4 Importance of Waste Management

- Its Protects the environment
- Recycling helps you to get money
- Reduces all types of waste
- Saves the earth and conserves energy



5.5 Hierarchical Process of waste disposing

This hierarchical process has **3R's** to it, namely, **Reduce, Reuse** and **Recycle**. This process denotes the favourability of the three processes according to a pyramid. Here it is seen that the process of minimization is preferred than the other two. Hence, this minimization process can be called as the cornerstone of all the waste management strategies or methods of waste management, by this the basic principle is that all the generated residues should be utilized to the maximum and only a minimal amount of waste should be generated. This minimal waste, utilizing suitable techniques, should be resourcefully reused through some other viable channels. Now, the resultant residue after the reuse should be thoroughly checked for the possibilities of recycling and if so, must be recycled properly and completely. If not, care must be taken to dispose of them in an eco-friendly manner or use them for obtaining any biofuel.

Advantages of disposing of clinical waste properly are:

- This Practice is highly lucrative (Increasing income)
- Keeps the environment clean and fresh
- Saves the Earth and conserves energy
- Needs More Global Buy-In
- Reduces environmental pollution
- Waste management will help you earn money
- Creates employment

Disadvantage of non- disposing **clinical waste** safely and manner (merits of waste management are:

- The process is not always cost-effective
- The resultant product has a short life
- The sites are often dangerous
- The practices are not done uniformly

Procedure of clinical wastes

The organization expects all staff to adhere to the following procedure for the disposal of clinical waste.

1. All clinical waste should be disposed of in sealed yellow plastic sacks
2. Non-clinical waste can be safely disposed of in normal black plastic bags
3. All clinical waste should be disposed of in sealed yellow plastic sacks.
4. Non-clinical waste can be safely disposed of in normal black plastic bags.



5. On no account should clinical waste be disposed of within standard domestic waste sacks.
6. The organization believes that yellow clinical waste bags are best used in pedal-type bins to prevent unnecessary hand contact and provides such bins in all appropriate areas where clinical waste is generated.
7. Sacks should never be filled more than three-quarters full and should be removed and sealed by staff wearing non-sterile gloves.
8. Sealed sacks should be handled by the tied neck only and should be handled with care. On no account should sacks be thrown or dropped.
9. Each sealed sack should be clearly labelled with the practice's details.
10. Sealed and labelled sacks should be collected by an authorised collector only and, while awaiting collection, full bags should be stored safely and securely away from patients, visitors, the general public, animals and pests.
11. Full sacks should be stored.
12. Sharps (used needles and broken glass) should be disposed of in sealed purpose-built sharps containers according to the practice's sharps policy and procedure and collected by authorized sharps collectors.
13. Under the Environmental Protection Act 1990, it is the responsibility of the practice manager to ensure that services contracted to collect clinical waste are properly licensed to do so and ensure the safe disposal of its clinical waste. Failure to do this may lead to prosecution.



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| Self-Check – 5 | Written test |
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Name..... ID..... Date.....

Directions: Answer all the questions listed below. Examples may be necessary to aid some explanations/answers.

Test I: Choice the correct answer

1. which one is the merit of waste management
 A/ The resultant product has a short life B/Needs More Global Buy-In C/ The sites are often dangerous D/ The practices are not done uniformly
2. Which one the advantage of waste management in Ethiopia
 A/ The sites are often dangerous B/ Keeps the environment clean and fresh C/ Saves the Earth and conserves energy D/ Reduces environmental pollution E/ All

Test: Short Answer Questions

1. Define the term clinical waste? (8 Points)

2. List some equipment that used during disposing clinical waste (5pts)

3. Write the advantage of manage clinical waste (4pts).

4. Write the types of waste removal from methods from clinical? (8 pts)

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You can ask your teacher for the copy of the correct answers

Note: Satisfactory rating - 15 points

Unsatisfactory - below 8 points



LG #79

LO-3: Provide Specific Clinical Care Advice

Instruction sheet

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

- Completing evaluation of patient needs to provide the base for advice provision in consultation
- Providing primary care advice to animal owner as required in consultation.
- Providing non clinical care advice to animal owner as required in consultation.

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:**

- Complete evaluation of patient needs to provide the base for advice provision in consultation
- Provide primary care advice to animal owner as required in consultation
- Provide non clinical care advice to animal owner as required in consultation

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”. Try to understand what are being discussed. Ask your trainer for assistance if you have hard time understanding them.
4. Accomplish the “Self-checks” which are placed following all information sheets.
5. Ask from your trainer the key to correction (key answers) or you can request your trainer to correct your work. (You are to get the key answer only after you finished answering the Self-checks).
6. If you earned a satisfactory evaluation proceed to “Operation sheets
7. Perform “the Learning activity performance test” which is placed following “Operation sheets” ,
8. If your performance is satisfactory proceed to the next learning guide,
9. If your performance is unsatisfactory, see your trainer for further instructions or go back to “Operation sheets”.

Information Sheet 1- Complete evaluation of patient needs and advice

1.1 Patient evaluation

The examination of your patient, along with obtaining a complete history, combines into the single most important step in caring for our patients. Whether your patients comes for a healthy patient visit or because of illness, exams start with your patient being weighed and you telling us about problems, concerns, and questions you have. More detailed questions about any issues typically follow from the veterinarian, as do questions about diet, non- infectious disease manage, keep all animal welfare and reflect an animal behavior, parasite prevention and body functions. The physical exam itself is a versatile and vital screening test. The veterinarian **looks, listens, smells, and feels** her or his way through all the parts of your patient and compares those findings to what “normal” or “ideal” should be. Results are recorded in detail in our computerized records system so we can accurately and easily track changes. Your history and our exam findings form the basis for further recommendations and discussion. For sick patients, this would include reviewing options for more diagnostics, if necessary, and treatment. Care plans need to be and are designed to meet the specific needs of each individual patient and their owner and what takes place in the exam room sets the stage for that. No other test or service provides a greater value.



Figure: --- Patient evaluation after treat

Clinical practice guidelines are statements that include recommendations intended to optimize patient care. They are informed by a systematic review of evidence, and an assessment of the benefits and harms of alternative care options. Patient evaluation is made through medical history, physical examination, routine laboratory tests, and other diagnostic procedures. The physical examination should include: types of infected or infested diseases, fully examined with includes the vital signs, complete drug uses, recovered from infections disease and efficacy of drug during clinicians stages, an appropriate measurement of body weight, with verification in the health status; an examination of the general demeanor; a calculation of body mass index (BMI); an



auscultation for respiration system, abdominal, and thoracic; a palpation of the lymph nodes; a thorough examination of the heart and lungs; an examination of the abdomen for enlarged kidneys, masses, distended urinary bladder, and abnormal aortic pulsation; a palpation of the lower extremities for edema and pulses; and neurological assessment.



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| Self-Check – 1 | Written test |
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Name..... ID..... Date.....

Directions: Answer all the questions listed below. Examples may be necessary to aid some explanations/answers.

1. How we can evaluate patients in clinic? **(4Pts)**.

2. How we know whether the patient is coming to health or ill? **(10pts)**.

3. Write the equipment which used during record history of patient evaluation? **(7Pts)**.

You can ask your teacher for the copy of the correct answers.

Note: Satisfactory rating - 14 points Unsatisfactory - below 7 points



Information Sheet 2- Providing primary care advice in consultation with veterinary surgeon.

2.1 Providing primary care advice

Advice is guidance or recommendations offered with regard to patient future action. Today's veterinarians are the only doctors educated to protect the health of both animals and people. They work hard to address the health and welfare needs of every species of animal. Veterinarians also play critical roles in environmental protection, research, food safety, and public health. Veterinarian's advice the farmers, private farmer and patients owner including but not limited:-

- Rearing the health and those having a good animal productions
- Eliminate those are non-producer and carrier animals from animals society and country.
- Keeps all animal welfare and know good animal behaviors
- Minimize an stress creator
- Deworming and vaccinate an animal following the deworm and vaccine programmes
- Report an animal that indicate behavior change and symptoms of disease such as claw overgrowth, lesion on different organ, lameness, etc.
- Eliminate and control external parasite, or report for the health technicians
- Follow and gets all animals health service advice as well as periodically.
- Isolate those animal diseased by zoonoses, quarantined those under risk, eliminate those carrier animals and follow theirs.
- Minimize animal overworking and overloading at grazing.
- Eliminate and control of animal disease causing agent.
- Use the give drug, anthelminths, acaricides and multi-vitamin appropriately and advice of the health technicians.



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| Self-Check – 2 | Written test |
|-----------------------|---------------------|

Name..... ID..... Date.....

Directions: Answer all the questions listed below. Examples may be necessary to aid some explanations/answers.

1. Define the term of 'Advice' at clinic **(2Pts)**.

2. Assume you are a clinician at 'C level' clinic. W/r Chaltu is the owner of **dog** the attacked with paraphimosis case and her dog surged at next day at 4:00 O'clock. write clearly what you advised the owner of patient?**(6Pts)**

You can ask your teacher for the copy of the correct answers.

Note: Satisfactory rating - 3 points Unsatisfactory - below 3 points



Information Sheet - 3: Provide non-clinical care advice with veterinary surgeon

3.1 providing non-clinical care

Non-clinical care is those which do not provide any type of medical treatment or testing. The non-clinical (or pre-clinical) development phase primarily aims to identify which candidate therapy has the greatest probability of success, assess its safety, and build solid scientific foundations before transition to the clinical development phase. Non-clinical work may support patient care, but the work does not provide direct diagnosis, treatment, certification or licensing or care for the patient. Those veterinarians also work on veterinarian surgical condition techniques such as fasting prior to surgery, manage wound before operation, control and manage wound dehiscence, Bathing some animals may be necessary to remove excess dirt and hair and is best done the day before the scheduled surgery, dehorning, debeaking, docking, castration, trimming of long hair, removing debris, etc and training about good animal management, husbandry practice, breeding system, artificial insemination and synchronization, nutritional adjustment etc. On the day of surgery, the surgeon and assistants should wash their hands. It is advisable to wear clean, non-sterile gloves at all times the animal is being handled.



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| Self-Check – 3 | Written test |
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Name..... ID..... Date.....

Directions I: Answer all the questions listed below. Examples may be necessary to aid some explanations/answers.

1. Write atleast 3 equipment that animal used during non- clinical case occurred (4 Pts).

2. Write the condition undertaken during non-clinical service (8Pts).

3. What you advised the patient owner under clinical cases (5Pts).

Test II: Choose the best answer

1. Which one of the following equipment is not used during non-clinical case? (8Pts)
A/ Scissor and needle B/ Soap and Gauze C/Bathing Room D/ Suture material
2. Which case is not loaded an animal non-clinical case at clinic? (4Pts)
A/ Hernia B/ Bloat C/ Traumatic reticuloperitonitis D/ Anthrax

Note: Satisfactory rating - 20 points Unsatisfactory - below 13 points
You can ask you teacher for the copy of the correct answers.



LG #80

LO-4: Maintain Clinic Security

Instruction sheet

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

- Handling and storing drugs in a safe and secure manner
- Disposing biological wastes, gloves, syringes, needles, sharps and other veterinary medicine containers
- Locking clinic when all staff left premises securely

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

- Handle and store drugs in a safe and secure manner
- Dispose biological wastes, gloves, syringes, needles, sharps and other veterinary medicine containers
- Lock the clinic when all staff left premises securely

Learning Instructions:

10. Read the specific objectives of this Learning Guide.
11. Follow the instructions described below.
12. Read the information written in the “Information Sheets”. Try to understand what are being discussed. Ask your trainer for assistance if you have hard time understanding them.
13. Accomplish the “Self-checks” which are placed following all information sheets.
14. Ask from your trainer the key to correction (key answers) or you can request your trainer to correct your work. (You are to get the key answer only after you finished answering the Self-checks).
15. If you earned a satisfactory evaluation proceed to “Operation sheets
16. Perform “the Learning activity performance test” which is placed following “Operation sheets” ,
17. If your performance is satisfactory proceed to the next learning guide,
18. If your performance is unsatisfactory, see your trainer for further instructions or go back to “Operation sheets”.



Information Sheet 1- Handling & storing drug in safe and secure manner

1.1 Handling and storing drug

A drug is any substance that causes a change in an organism's physiology or psychology when consumed. Drugs are typically distinguished from food and substances that provide nutritional support. Improper use (handling) of medicine is not only money wasting, but it could also result in delay in treatment of diseases. It could also lead to poisoning if overdosed. Therefore, please observe the followings for safe use of medicine. Under normal storage conditions drug and any chemical that used in vet clinics stored in dry, well-ventilated premises at temperatures of 15–25°C or, depending on climatic conditions, up to 30°C. Extraneous odors, other indications of contamination, and intense light must be excluded.

Methods of Storing and handling of drug securely

1. Always keep medication in a designated cabinet with a lock.
2. Don't store medicine in food bottles. You should keep medicine out of reach of the children.
3. Medicines in general should be kept in a cool and dry place, but some of them, such as insulin products and some liquid antibiotics, should be kept in the refrigerator but not in the freezer.
4. Check expiry dates of medicines and discard expired or spoiled medicines.
5. Never put medicine in containers that are designated for other medicine. Never put different kinds of drugs in one bottle.

1.2 Handling drug in safe manner

- a) Make sure that you know how to take the medicine. For instance, note whether you should swallow it, put it under your tongue, chew it, inhale it, apply it externally, or insert it as a suppository. It's important to apply the medication correctly.
- b) Read the medicine's label and instructions carefully. Take note of the dosage, ingredients, indications, warnings, and side effects, in order to avoid undesirable results. For example, some medicines become poisonous if combined with alcohol.
- c) Don't take medicines in the dark in order to avoid a mistake.
- d) Don't take more than one kind of medication at a time unless under a doctor's instructions. Otherwise you may experience harmful drug interaction.
- e) If you develop a rash, stomachache, headache, or other reactions after taken medication, stop taking it immediately and consult your doctor.
- f) When giving medicine to children, don't refer to it as 'candy'.
- g) Children should be supervised when taking any medicine, with extra care taken when using medicines that come in the form of soft gel capsules. Parents and caregivers should follow the instructions for use for all medicines given to children.



- h) Pregnant and breastfeeding women should not use or take medicines unless instructed by a doctor, as some medicines may pass into the placenta or breast milk and pose adverse impacts to the fetus or the infant.
- i) Seek medical advice as soon as possible if you experience any serious side effects suspected to be related to your drugs.
- j) Most orally taken medications such as tablets should be swallowed whole with water. Tablet should not be broken into pieces or crushed before taking unless as directed by doctor or healthcare professionals such as pharmacist have been consulted.



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| Self-Check – 1 | Written test |
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Name..... ID..... Date.....

Directions: Answer all the questions listed below. Examples may be necessary to aid some explanations/answers.

1. Write how drug is handled and stored in safe manner? **(6Pts)**

2. Write the method drug store techniques in clinic **(3 Pts)**.

3. Difference between drug and food? **(4Pts)**.

Note: Satisfactory rating - 8 points Unsatisfactory - below 5 points
You can ask you teacher for the copy of the correct answers.



Information Sheet 2- Disposing of biological wastes, sharp material and gloves

2.1 Disposing of Biological Waste, Sharp Material and Gloves

Animal waste includes carcasses; body parts; bulk whole blood and blood products, serum, plasma and other blood components; and bedding of animals. Biohazardous waste is infectious or, because of its physical and/or biological nature, may be harmful to humans, animals, plants or the environment. Biological waste means discarded biological material from teaching, clinical, and research laboratories and operations. This does not include household or office trash, waste from food services, physical plant, bedding and manure from normal agricultural operations or bedding and litter from non-infectious animals. All waste that contains infectious material or which, because of its biological nature, may be harmful to humans, animals, plants or the environment is biohazardous waste. Biohazardous waste includes: - animal waste known or suspected of being contaminated with a pathogen; bulk human blood or blood products; microbiological waste; pathological waste; sharps; and hazardous products of recombinant DNA biotechnology and genetic manipulation.

Treatment of all laboratory biological waste prior to disposal is good laboratory practice, and is highly recommended, but biohazardous waste must be treated prior to disposal. Acceptable treatment methods include thermal or chemical disinfection, encapsulation (solidification), or incineration. The key requirements for disposal of biohazardous waste are that it must be:

- Segregated from other waste
- Securely packaged
- Specifically labeled to indicate the method of treatment
- Transported to the point of treatment or disposal by appropriately trained personnel
- Treated to eliminate the biological hazard; and documented by maintenance of appropriate records.



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| Self-Check – 2 | Written test |
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Name..... ID..... Date.....

Directions: Answer all the questions listed below. Examples may be necessary to aid some explanations/answers.

1. write clearly the difference between biological waste and Biohazard is **(12Pts)**

2. Write the element of for disposing of biohazard waste is? **(8Pts)**.

3. Discuss the method of disposing biological waste in clinic **(5Pts)**

Note: Satisfactory rating - 13 points Unsatisfactory - below 10 points
You can ask you teacher for the copy of the correct answers.



Information Sheet -3: Locking clinic when staffs left the premises

3.1 Locking clinic

The great work of clinics handling and safe are locking after finished work. Before locked clinic all used and re-used material, equipment, drug, table, diagnostic material, minor surgical material, PPE and other are returned in to store room. Waste material and biological hazard are also removed from clinic in safe manner. Those hazard and waste material are removed in incinerated or burring area. All PPE equipment and other treatment equipment are also cleaning, disinfected, and sterilized in good manner. A clinic is also locked when no drug available, non-functional available tools, during vaccination programmes, available of expired drug etc. clinics also locked when non-related technician use; sexually transmissible disease and high chronic disease occurred.



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| Self-Check – 3 | Written test |
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Name..... ID..... Date.....

Directions: Answer all the questions listed below. Examples may be necessary to aid some explanations/answers.

1. Write the reason that necessary to lock a clinic? **(10 Pts)**

2. when we locked the clinic area, waste the disposed from clinic is _____, _____ and _____ **(8Pts)**

You can ask your teacher for the copy of the correct answers.

Note: Satisfactory rating - 11 points Unsatisfactory - below 7 points







Reference Materials

Book:

1. Erik Oberg, Franklin D. Jones, Holbrook L. Horton, and Henry H. Ryffel, "Machinery's Handbook", 27th Edition, Industrial Press, Inc., New York, NY, 2004
2. Helmi A. Youssef and Hassen El-Hofy, "**Machining technology, Machine tools and operations**", Taylor & Francis Group, Boca Raton, London, New York, 2008
3. Fundamentals of machine tools, Training Circular No. 9-524, headquarters department of the army, Washington, DC, 29 October 1996
4. **Shafizan Bt. Shariffuddin School of Manufacturing Engineering UniMAP**
5. Inspection of Metals—Understanding the Basics, Copyright © 2013 ASM International F.C. Campbell, editor, All rights reserved www.asminternational.org
6. Machining and Machine Tools by A. B. Chattopadhyay.
7. Metal Cutting: Theory and Practice by A. Bhattacharya.

WEB ADDRESSES

1. ISO 9000:2005 Quality Management System – Fundamentals and Vocabulary
2. <http://www.qualitygurus.com/courses/mod/forum/discuss.php?d=1557>
3. <http://www.iitg.ac.in/spal/Methods%20of%20mounting%20of%20jobs%20and%20cutting%20tools.ppt>
4. http://www.iitb.ac.in/safety/sites/default/files/Machine%20Safety_0_0.pdf
5. <https://www.fda.gov/media/109408/download>
6. https://www.flexiblemachining.com/pdf/quality_policy.pdf



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