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Ministry of Labor and Skills

Animal Health

Level-III

Based on March 2022, Version 4 Occupational standard



Module Title: - Providing First Aid and Responding to Emergencies for Animals

LG Code: AGR ANH3 M06LO (1-3) LG (18-20)

TTLM Code: AGR ANH3 M06 TTLM 0523v1

May 2023

Addis Ababa, Ethiopia

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Introduction to the Module

This module covers the knowledge, skills and attitude required to recognize emergencies, provide basic first aid broad spectrum of situations incidents and implement emergency care life support measures to animals. It also comprises knowledge and skills required to euthanize sick, injured or unwanted animals in a humane way that complies with safe operating practctices and with ethical, welfare and legislative requirements.

LG #18	LO #1- Assess emergency situation and provide basic first aid

Instruction sheet 1

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

- Aims of fist aid
- Emergency situation
- Following standard guideline and OHS procedures
- Selecting and using first aids kits
- Safe handling of animal
- Assessing physical condition and vital signs
- ABC rules of first aid
- Referring serious cases
- Documenting and reporting first aid support

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:

- Describe aims of fist aid
- Recognize emergency situation according to organizational manual.
- Assess risk posed to self, others and animals following standard guideline.
- Apply OHS procedures and safe working practices including the selection of PPE to suit the emergency situation.
- Select, use, maintain and store tools and equipment for safety and first aids kits required for emergencies in good order.
- Handle animal safely and humanely using available resources.
- Assess Physical condition and vital signs of the animal according to organizational guideline
- Evaluate and select options for assisting animals with reference to workplace protocols and regulations

- Provide basic first aid care following ABC rule and First aid assistance is sought from others as appropriate and required.
- Refer serious cases that need further treatment and correction to veterinary clinic for further process
- Document and report all first aid support activities to supervisor and completed on referral slip.

Learning Instructions:

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

Information Sheet 1

1.1 Aims of fist aid

First aid is an emergency preparedness ready-reference for injured/suddenly sick animals. In a veterinary practice, a veterinary nurse is often the most obvious candidate for the role of official practice first aider. A veterinary first aider is a person who has received basic training in administering first aid to animals. This includes providing initial medical care to injured or ill animals until they can be seen by a veterinarian. Veterinary first aiders are often animal owners, animal welfare volunteers, or professionals who work with animals on a regular basis. Their training may include topics such as emergency assessment and treatment of animal injuries, CPR for animals, and management of common medical emergencies in animals. Wise preventive measures, intelligent use of first aid principles, coupled with recognition of abnormal symptoms and treatment of disorders, diseases, and problems, lead to effective health care. The following are the major aims of first aid:-

a) Preserve Life

Your first aim is to preserve life by carrying out emergency first aid procedures. For example, opening a casualty's airway or performing cardiopulmonary resuscitation (CPR). Preserving life should always be the overall aim of all first aiders. Remember though, this includes your own life! You should never put yourself or others in danger. This is why the first stage in assessing a casualty is to conduct a risk assessment and check for any dangers to yourself or bystanders. If a situation is too dangerous to approach, you should stay back and call for professional help.

b) Prevent Deterioration

The second aim of first aid is to prevent the casualty's condition from deteriorating any further. For example, asking a casualty with a broken limb to stay still and padding around the injury will prevent the fracture from moving and causing further injury or pain. In addition, this aim includes preventing further injuries**.** You should attempt to make the area as safe as possible and removing any dangers. If removing danger is not possible you should attempt to remove the patient from the danger or call for specialist help.

c) Promote Recovery

Finally, you can promote recovery by arranging prompt emergency veterinary help. In addition, simple first aid can significantly affect the long-term recovery of an injury. For example, quickly cooling a burn will reduce the risk of long-term scarring and will encourage early healing.



Figure 1.1:- Aims of first aid

1.2 Emergency situation

Introduction

An emergency is any situation that poses an immediate threat to an animal's health, security, property, or environment. Knowing how to assess the signs that make up an emergency will help you know how to handle it. In addition, being well-prepared for an emergency will pay off when it's time to handle any emergency situation. The following three conditions will handled by the first aid provider to any emergency situations.

i. Primary Survey and Resuscitation

The primary survey is the first impression the first aid provider has of the situation, and the immediate action that is taken. A well-informed owner will be able to make a quick

assessment of the scene and a quick examination of the victim. Immediate attention is given to the animal's level of consciousness, airway patency, breathing, and circulatory functions (including pulse). Resuscitation is the prompt treatment of life-threatening problems.

ii. Secondary Survey and Definitive First Aid

The secondary survey consists of an examination and assessment of the animals' eyes, ears, nose, neck, chest, abdomen, back, extremities, and rectal temperature and the procedures to stabilize and protect the animal from further harm.

iii. Transport

Many emergencies will require professional help. Knowledge of the proper way to transport the animal to a veterinary medical facility for professional care can prevent further injury, protect the owner from dangerous situations, and allow for timely care. First aid begins with a quick but careful survey of the scene. Then quick decisions need to be made, depending on the circumstances.

- Make sure the accident scene is safe before proceeding. Take steps to prevent further injury to you or your animal
- Enlist the help of others.
- Call, or have someone call, your veterinarian or the emergency veterinary center.
- (Keep those phone numbers handy at all times!) Describe the animal; give a short description of what happened and what has been done. Give your name and telephone number. Don't hang up until the professionals have told you what to do.
- Administer essential first aid. Carefully transport the animal to the veterinary facility for examination if there is any question as to the seriousness of the injury or sudden illness. It is highly recommended to telephone first in all but the most life threatening situations.

1.2.1. Hemorrhage, Severe vomiting and diarrhea

- **Hemorrhage**

Animals often suffer blood loss as a result of trauma. If bleeding is severe or continuous, the animal may lose enough blood to cause shock (loss of as little as 2 teaspoons per pound of body weight may cause shock). Emergencies may arise that require the owner to control the bleeding, even if it is just during transport of the animal to the veterinary facility. Animal owners should know how to stop hemorrhage (bleeding) if their animal is injured. Bleeding, also called hemorrhage, is the name used to describe blood loss. It can refer to blood loss inside the body, called internal bleeding, or to blood loss outside of the body, called external bleeding.

✓ **Techniques to stop external bleeding**

The following techniques are listed in order of preference.

- **Direct Pressure: -** Gently press a compress (a pad of clean cloth or gauze) over the bleeding absorbing the blood and allowing it to clot. Do not disturb blood clots after they have formed. If blood soaks through, do not remove the pad; simply add additional layers of cloth and continue the direct pressure more evenly. The compress can be bound in place using bandage material which frees the hands of the first provider for other emergency actions. In the absence of a compress, a bare hand or finger can be used. Direct pressure on a wound is the most preferable way to stop bleeding.
- **Elevation: -** If there is a severely bleeding wound on the foot or leg, gently elevate the leg so that the wound is above the level of the heart. Elevation uses the force of gravity to help reduce blood pressure in the injured area, slowing the bleeding. Elevation is most effective in larger animals with longer limbs where greater distances from wound to heart are possible.

Direct pressure with compresses should also be maintained to maximize the use of elevation. Elevation of a limb combined with direct pressure is an effective way to stop bleeding. Pressure on the supplying artery. If external bleeding continues following the use of direct pressure and elevation, finger or thumb pressure over

the main artery to the wound is needed. Apply pressure to the femoral artery in the groin for severe bleeding of a rear leg; to the brachial artery in the inside part of the upper front leg for bleeding of a front leg; or to the caudal artery at the base of the tail if the wound is on the tail. Continue application of direct pressure. Pressure Above and Below the Bleeding Wound This can also be used in conjunction with direct pressure. Pressure above the wound will help control arterial bleeding. Pressure below the wound will help control bleeding from veins

- **Tourniquet: -** Use of a tourniquet is dangerous and it should be used only for a severe, life-threatening hemorrhage in a limb (leg or tail) not expected to be saved. A wide (2-inch or more) piece of cloth should be used to wrap around the limb twice and tied into a knot. A short stick or similar object is then tied into the knot as well. Twist the stick to tighten the tourniquet until the bleeding stops. Secure the stick in place with another piece of cloth and make a written note of the time it was applied. Loosen the tourniquet for 15 to 20 seconds every 20 minutes. Remember this is dangerous and will likely result in disability or amputation. Use of a tourniquet should only be employed as a last-resort, life-saving measure!

✓ **Internal Bleeding**

Internal bleeding is a life-threatening condition, but it is not obvious like external bleeding. Any bleeding which is visible is external. Internal bleeding occurs inside the body and will not be seen. There are, however, external signs of internal bleeding:

- The animal mucus membrane is pale (check the gums or eyelids).
- The animal is cool on the legs, ears, or tail.
- The animal is extremely excited or unusually subdued.
- If any of these signs are evident, the animal should be immediately transported to a veterinary facility for professional help. Remember: internal bleeding is not visible on the outside.



Figure 1.2:- Sever hemorrhage from dog nose

- **Severe vomiting and diarrhea**

Diarrhea is the frequent evacuation of watery stools. Vomiting is the forceful expulsion of stomach contents through the mouth. Vomiting and diarrhea are associated with a host of problems that are referred to collectively as gastroenteritis. Some cases are quite severe (e.g., poisoning), and some are not (e.g., dietary indiscretion). If fever is present, infection may be a cause. Most infections that cause diarrhea and vomiting are contagious, so it is wise to assume that other animals might be vulnerable if they are exposed. If your animal is not feeling well and has vomiting and/or diarrhea, see a veterinarian.

What to Do

- ✓ Remove all food and water.
- ✓ Check for signs of dehydration.
- ✓ If the diarrhea and/or vomiting continue or the animal acts ill, seek veterinary attention.
- ✓ If no vomiting occurs for 6 to 8 hours, begin to frequently give small amounts of clear liquids (water, Gatorade, Pedialyte, or other electrolyte solution). A rule of thumb is to give 1 teaspoon per pound of body weight every 2 or 3 hours throughout the day and night.

What not to Do

- ✓ Do not administer any over-the-counter or prescription medications to your animal without talking to a veterinarian first.

- ✓ Do not allow the pet to eat or drink anything until there has been no vomiting for 6 to 8 hours.





Figure 1.3:- Images of dogs having severe vomition and diarrhea

1.2.2. Bone fracture, Choking and difficulty breathing

Bone fracture

A fracture refers to a break or crack in a bone. There are several different types of fractures, and each type has different complications and methods of repair. Your veterinarian can help you decide how best to fix the fracture and if referral to a specialist is in your pet's best interest. A fracture, dislocation or severe sprain may be suspected when the animal suddenly appears lame on a leg, or picks up a leg and won't use it. These may also be suspected following any major fall or blunt injury. Obvious findings of a bone sticking out from (protruding) a wound are rare. What is more common is the unusual angle or deformation of the fractured area, and swelling. Accurate diagnosis requires the use of x-rays, which usually must be taken with sedation or anesthesia to get the most accurate results. An x-ray is the only way to accurately diagnose a fracture.

Fracture Types

a) **Closed fracture:** Fractures in which there is no related external wound.

b) **Open (formerly known as compound) fracture:** Fractures associated directly with open wounds (the bone may or may not be visible through the wound).

c) **Dislocation:** An injury to the connective tissues holding a joint in position that results in displacement of a bone at the joint.

d) **Sprain:** An injury to a joint, ligament, or tendon in the region of a joint. It involves partial tearing or stretching of these structures without dislocation or fracture.

e) **Avulsion: -** An avulsion fracture is a bone fracture which occurs when a fragment of bone tears away from the main mass of bone as a result of physical trauma.

Other types of orthopedic injuries can involve torn ligaments, particularly in the knee. Many athletic, large breed dogs will tear the cranial cruciate ligament in their knee, which results in a sudden loss of use of the leg, and joint pain and swelling in the knee. Surgical stabilization is the best means to repair this injury.

What to Do

- ✓ Before treatment, precautions should be taken to prevent biting, scratching and kicking injury to the first aid provider. Restrain the animals.
- ✓ Stop bleeding with direct pressure.
- ✓ Open fractures should be covered with a sterile gauze dressing if possible. If this is not available, use a clean cloth or feminine pad applied over the opening and bone.
- ✓ If possible, the animals should be immobilized on a large board for transport.
- ✓ If the animals can still use three legs, support the rear legs with a towel under the abdomen (with the ends held together above the back) used as a sling.
- ✓ Discuss treatment options with your vet, including referral to an orthopedic specialist.
- ✓ Splinting the fracture at home without pain medication greatly increases the risk of being bitten, and may actually make the fracture worse. Some fractures, such as thigh or femur fractures, cannot be splinted.

What NOT to Do

- ✓ Do not flush the wound with saline or water as these only risks driving contaminants deeper into the wound.
- ✓ Never attempt to set or reduce a fracture or try to push a protruding bone back into position.

- ✓ Do not give any over-the-counter or prescription medications to your pet unless directed to do so by a veterinarian

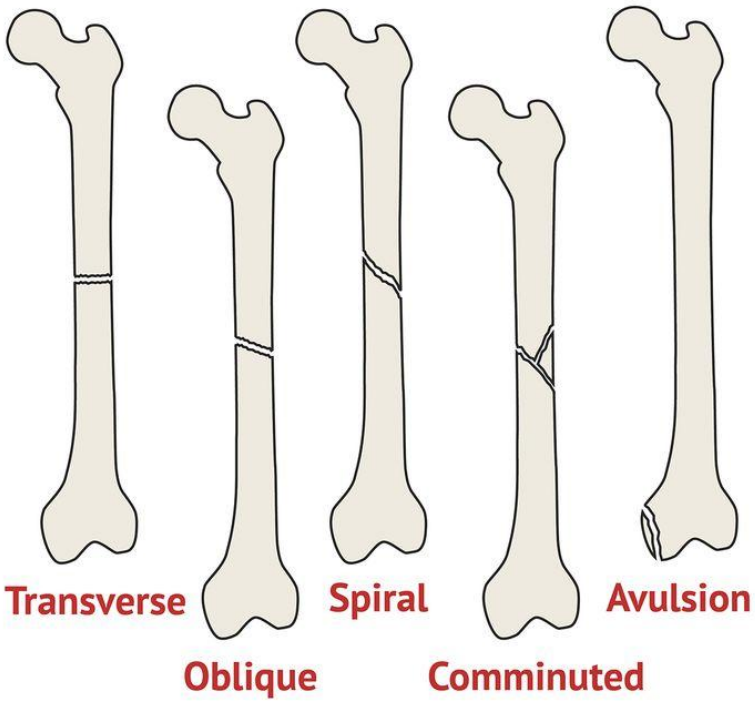


Figure 1.4:-Images of types of bone fracture 3D



Figure 1.5:- broken bones of dogs and its management

Choking and difficulty breathing

Choking is interference with breathing caused by foreign material in, or compression on, the trachea (windpipe). Thankfully, true choking is a very rare occurrence. Many animal wners will

seek veterinary care because they believe their aniaml has something stuck in its throat, and this is rarely the case. It is far more likely that your animal has something mild and infectious such as tracheobronchitis (commonly called kennel cough) and is coughing or gagging rather than choking.

Frequently, coughing is confused with choking. Both cause the animal to forcefully exhale ex.pet animals. With choking, the animals have difficulty inhaling. When coughing, the animals can inhale almost normally. Be careful to distinguish the two: attempting to give first aid to a pet or any domestic animals who is merely coughing can cause injury.

- **If the animal is Unconscious (especially pet animals)**
  - ✓ **Perform a Finger Sweep**: - Open your pet's mouth and do a finger sweep by placing your finger along the inside of the mouth, sliding it down toward the center of the throat over the base of the tongue, and gently "sweeping" toward the center to remove any foreign material. Warning: there is a structure deep in the throat (Adam's apple) that feels like a smooth bone. Do not attempt to pull it out!
  - ✓ **Begin Rescue Breathing**: - Rescue breathing is described in the article on CPR. If air is not entering the lungs, slap the chest wall firmly or perform the Heimlich maneuver by putting the pet on their back, placing your hands over the abdomen near the bottom of the rib cage, and gently but firmly thrusting toward the spine. Perform a finger sweep and begin rescue breathing. Repeat until the foreign body is clear and the lungs can be inflated. Transport to the veterinarian right away.
- **If the animal is Conscious**

Perform a finger sweep only if it will not excite the animal. Do not perform a finger sweep if you believe your animal will bite you. Stay calm and try to keep the animal calm. If the animal is overheated, cool them with cold water applied to their extremities (ears and feet) and belly, and transport them to the nearest veterinarian or veterinary emergency clinic if there is one in your area. Running the air conditioning in the car on the way may help keep them cool.

Difficulty breathing is also called dyspnea and is a medical emergency. Respiratory distress is recognized by increased effort to breathe; noisy or squeaky breathing; and cyanosis (a bluish tinge to the lips, tongue, and mucous membranes). In cats, breathing with the mouth open (panting like a dog) is a sign of severe distress and should be evaluated by a veterinarian right away.

It is imperative to get the animal examined to determine the cause. Diagnostic tests such as x-rays, blood tests and ultrasound may be needed, but the animal must be stabilized (often with oxygen or by removing fluid from the chest) before they can withstand the rigors of testing if respiratory distress is severe.

What to Do: - Brachycephalic (short-nosed) breeds warrant a special mention.

- ✓ Keep the animal and yourself calm.
- ✓ If the animal has choked on a foreign body, perform the Heimlich maneuver and/or a finger sweep
- ✓ Perform rescue breathing if necessary (see rescue_breathing in the choking article).
- ✓ If the animal is overheated, moisten the feet and ears with cool water to promote heat exchange.
- ✓ If you are driving to the veterinary hospital, turn the air conditioner in the car on to its coldest setting
- ✓ Seek veterinary assistance as soon as possible

What NOT to Do

- ✓ Do not upset the animal or pet.
- ✓ Do not perform rescue breathing on a conscious animal or pet.
- ✓ Do not give anything by mouth.



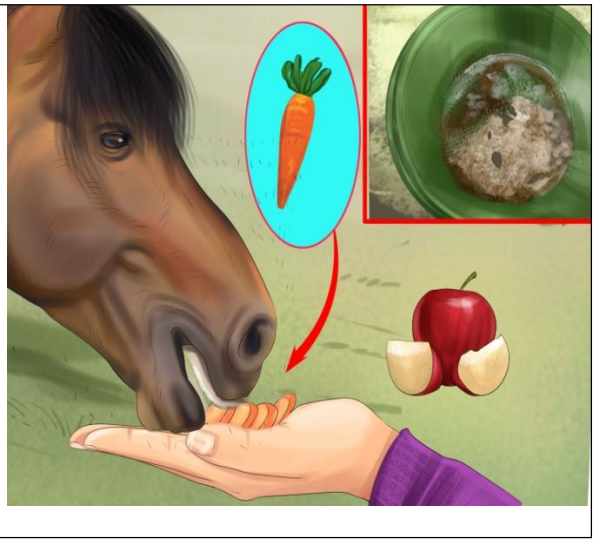


Figure 1.6:- clinical symptoms of animals with choking

1.2.3. Bloat, Dystocia and Hypocalcaemia

- **Bloat**

Bloat is a life-threatening condition in which the stomach fills with air (dilatation) and/or twists upon itself (volvulus). It's also called gastric dilatation volvulus (GDV).

What to Do

- ✓ Transport to a veterinary hospital or emergency facility immediately. In all cases, this condition requires professional assistance. Most cases will require surgery.
- ✓ Veterinarian will use stomach tube to remove any gases and fluid from the stomach based the symptoms they noticed and diagnosed.

What NOT to Do

- ✓ Do not attempt to relieve the gas from the stomach.
- ✓ Do not give anything by mouth unless you are veterinary professionals.

It is imperative that this condition be recognized early. Your animal's abdomen may not have a bloated appearance. Signs of bloat include:

- ✓ Drooling of saliva
- ✓ Frequent retching and attempts to vomit (occasionally patients may be able to regurgitate a pool of foamy saliva)
- ✓ Anxiety, restlessness, and pacing
- ✓ Lethargy or agitation
- ✓ Depression and shock





Figure 1.7:- 3D and normal pictures of bloated animals

- **Dystocia**

Dystocia refers to abnormal or difficult birth. It is expected to occur in about 10-15% of first-calf heifers and in 3-5% of mature cattle. In cattle the most common cause is foeto-maternal disproportion, but faulty disposition is also often to blame. Early intervention minimizes the effects of dystocia on calves. Cows and especially heifers should be monitored regularly and provided with assistance promptly if stage 2 labor is prolonged, i.e. more than an hour.

When dystocia is diagnosed in animals, two forms of treatment exist: **medical or surgical therapy**. Medical management of dystocia has the advantage of aiding completion of the parturition process without surgery or anesthesia. However, since not all cases of dystocia can be managed medically, educated and careful decision making is required prior to instituting medical management in cases of dystocia. Improper medical treatment, especially when surgical management is clinically indicated, can result in compromise and even death of the dam and fetuses.

At the beginning of labor, the contractions may be infrequent, weak, or incomplete. The female may continue for up to 3 hours before a veterinary examination is necessary. If the contractions are frequent, regular, and strong and no young is produced in 15 to 30 minutes, the animals should be taken to a veterinarian.

What to Do

- ✓ If a baby is visible in the birth canal and appears stuck, gently grasp the foot or feet. With a steady motion gently pull on the baby only when the female is contracting. If the baby does not come out easily, transport the animals (pet) to a veterinarian.
- ✓ When the baby is born, it will likely be covered in a membrane. If the mother doesn't remove it, tear this membrane and remove it from the head region of the baby.
- ✓ If the mother doesn't remove the umbilical cord (or is being rough with it), tie it with a piece of string one fourth of an inch from the baby's abdomen. Then cut the

cord one half of an inch from the abdomen with a sharp scissor. Apply iodine to the stump.

- ✓ Keep the babies warm. It is best to leave them with their mother, but sometimes she doesn't stay with them. In this instance, put a milk bottle filled with warm water near the babies. A hot water bottle works, as does a heating pad (set on low only!) Allow room for the babies to move toward or away from the heat source.

What not to Do

- ✓ Do not put your fingers in the birth canal as you may cause infection.
- ✓ Do not forcibly attempt to remove a baby.
- ✓ Do not assist delivery by pulling on the head of a baby.
- ✓ Do not lift the baby by the umbilical cord.
- ✓ Do not use a heating pad on a high or medium setting.
- ✓ Most kitten and puppy births go smoothly, with the mother doing all the work. The babies contentedly nurse on the mother soon after birth.



Figure 1.8:- Signs of difficulty birth in dogs

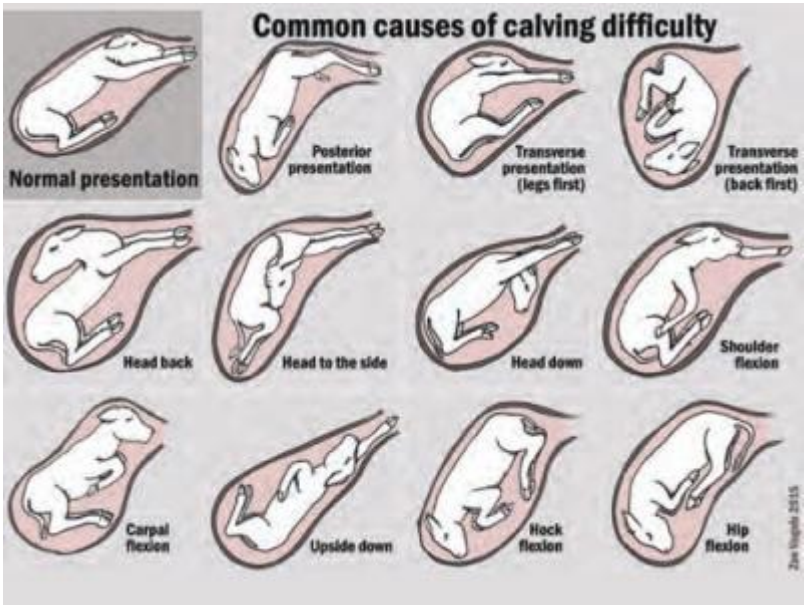


Figure 1.9:- different positions and presentation of calves causing to dystocia of cow

- **Hypocalcaemia**

Hypocalcemia is a treatable condition that happens when the levels of calcium in animal blood are too low**.** Many different health conditions can cause hypocalcemia, and it's often caused by abnormal levels of parathyroid hormone (PTH) or vitamin D in the body. Hypocalcemia causes the major clinical manifestations of hypoparathyroidism by increasing the excitability of both the central and peripheral nervous systems. Peripheral neuromuscular signs classically include muscle tremors, twitches, and tetany.

General guidelines for providing first aid for hypocalcemia in animals:

- ✓ Contact a licensed veterinarian immediately for further instructions and guidance.
- ✓ Provide Calcium Borogluconate
- ✓ If the animal is conscious, provide them with calcium supplements or calcium-rich foods such as milk or cheese.
- ✓ Keep the animal warm and comfortable.
- ✓ Monitor the animal's breathing and heart rate.
- ✓ If the animal is unconscious, perform CPR if you are trained to do so.

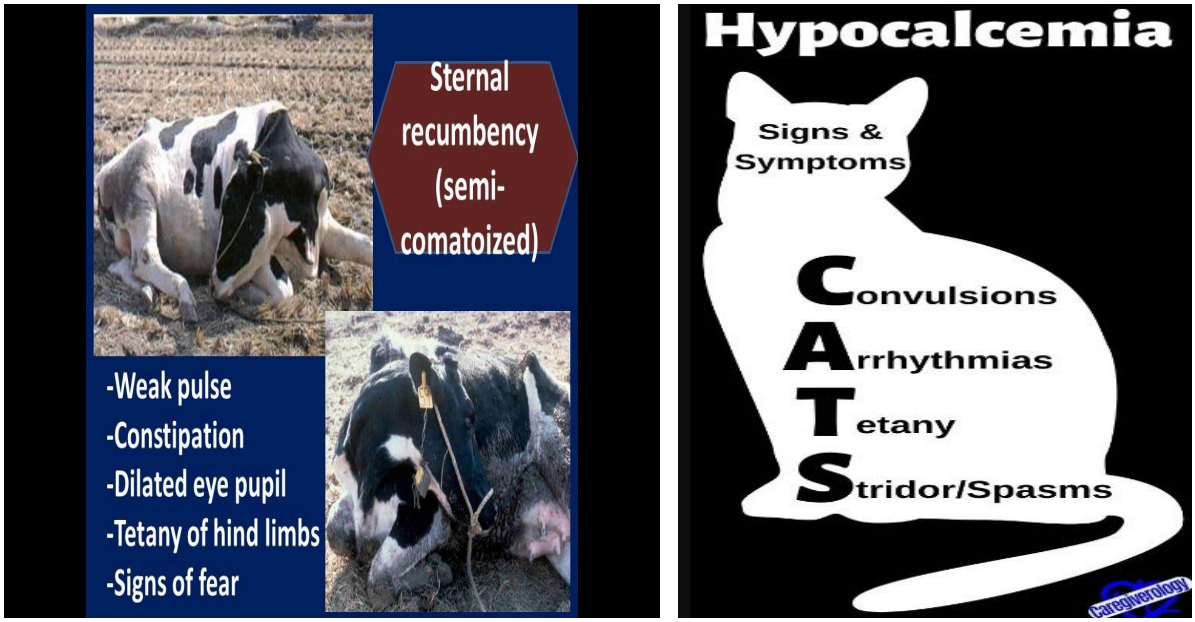


Figure 1.10:- symptoms of hypocalcemia in animals

1.2.4. Snake bite or poisoning

- **Snake bite:-**

Snakebite is a complex problem. The severity and type of damage done by venom depends on the type of snake involved, the age of the snake, and the size of the animal that was bitten. The vast majority of animals that are bitten by a snake will survive, but medical attention is vital to ensure the best outcome.

Some snakes have venom that causes severe shock and rapid death. Others have most of their effect on the muscles or have effects that can be delayed by days or weeks. Some venom is concentrated and some isn't, thus requiring a large quantity before damage is done.

The first goal in snakebite treatment is to keep the venom from circulating in large quantity throughout the body. However, keeping all the venom in the area of a bite (as happens with ice packs or tourniquets) may cause severe muscle damage. Antivenin administered at the hospital is the most direct and helpful treatment for your animal. Antivenin can cause severe allergic reactions in some pets, and must be administered under controlled conditions and monitored closely. Most pets and some domestic animals that have been bitten will need to be admitted to the hospital for treatment, and some domestic animals

and pets can have large areas of dead tissue that need to be surgically cleaned over several days or weeks.

What to Do

- ✓ Muzzle your animal to avoid being bitten – snakebites can be painful, and your animals may try to protect themselves.
- ✓ Immobilize the part of the animal that has been bitten by the snake, if this can be done safely. Try to keep it at or below the level of the heart.
- ✓ Keep the animals calm and immobile; carry if necessary.
- ✓ Seek veterinary attention as soon as possible.
- ✓ Try to identify the snake if it can be done without risk: do not attempt to capture or kill the snake. It is helpful to identify the type of snake to aid your veterinarian with treatment. Do not bring the snake into the veterinarian's office a photograph will do.

What NOT to Do

- ✓ Do not cut over the fang marks.
- ✓ Do not attempt to suck out the venom.
- ✓ Do not attempt to capture or kill the snake
- ✓ Do not manipulate the bitten area any more than needed.
- ✓ Do not allow the animal to move about freely.
- ✓ Do not ice pack or tourniquet the area.
- ✓ Do not administer any medications except on a veterinarian's advice

- **Poisoning:**

Poisoning is a condition that results from the ingestion, inhalation, absorption, injection, or application of a substance that causes structural damage or functional disturbance of body tissues. The poison can be a plant, a medication given in excess, a cleaning product, or other household chemicals.

What to Do

- ✓ Call a veterinarian or a poison control center, and follow their instructions.
- ✓ If the product is a petroleum product, cleaning solution, strong acid, or strong alkali, if the substance was ingested more than 3 hours ago, or if your animal is unconscious,

not able to stand, or is having trouble breathing, you must get your veterinarian as soon as possible.

What NOT to Do

- ✓ Do not give any liquid: liquids may move the poison into the body sooner.

1.2.5. Other emergency situation

Among emergency situations other than the above mentioned conditions that requires veterinary emergency assistance few are listed below:-

- **Burns: -** A burn is any injury of tissue caused by heat, flame, chemicals, or electricity. Burn classification determines the severity of the wound based on the depth of the tissue injury.

What to Do

- ✓ Extinguish all flames.
- ✓ Use appropriate measures to avoid being bitten (handle your animal).
- ✓ Avoid touching any animal that has been electrocuted until the power has been turned off.
- ✓ If needed, move animal carefully away from electrical source with a wooden broom (not metal).
- ✓ For thermal or electrical burns, immediately apply cool water compresses with a clean cloth to the site of the injury, changing them frequently as necessary to keep the site cool and wet. Continue this for at least 30 minutes.
- ✓ For chemical burns
- ✓ Transport your animal to a veterinary facility as soon as possible for further care.

What NOT to Do

- ✓ Do not apply ointments or butter.
- ✓ Do not delay seeking veterinary attention.
- ✓ Do not attempt to remove burned hair or skin yourself.

- **Electrocution: -** Electrocution can cause severe tissue damage (like a thermal or heat burn can) and can also lead to serious internal complications like pulmonary edema (fluid in the

lungs). Immediate veterinary care is needed, but several things you can do at home can minimize the extent of the injury and promote healing.

What to Do

- ✓ Unplug the electrical cord or shut off the electricity.
- ✓ If this is not possible, use a dry wooden broom or other non-conductive object to move the animal away from the source of the electricity.
- ✓ Check for breathing and pulse. Begin CPR if necessary.
- ✓ If the animal is breathing, check the mouth for burns if this can be done safely. Apply cool compresses to burns.
- ✓ Cover the animal with a blanket to prevent heat loss.
- ✓ Seek veterinary attention as soon as possible.

What NOT to Do

- ✓ Do not fail to get the animal examined even though he or she seems perfectly normal after being separated from the source of electricity.
- ✓ Do not give any medications or liquids unless instructed to by a veterinarian.

- **Cardiopulmonary resuscitation: -** Cardiopulmonary resuscitation (CPR) is the treatment required to save an animal (or human) life when suffering cardiopulmonary arrest. The intent of CPR is to provide sufficient blood flow and oxygen to the brain and vital organs to support life until more advanced medical therapy can be started. CPR consists of two parts:
  - ✓ Rescue breathing
  - ✓ Chest compressions

These two techniques combine to keep the lungs supplied with oxygen and to keep blood circulating, carrying oxygen to the other parts of the body such as the brain and vital organs.

- Basic CPR is CPR performed by trained bystanders at the scene of the arrest.
- Advanced CPR is CPR performed by trained teams of professionals.
- Basic CPR is the most important, and will be described in this section.

All tissues require a steady source of oxygen. If the source is interrupted for only a few minutes, irreversible damage may be done. If an arrest occurs, basic CPR must be initiated at the scene.

Basic CPR: Rescue Breathing

- Ensure an Open Airway
- Observe for Effective Breathing
- Begin Rescue Breathing
- Give 3 to 5 Full Breaths

Basic CPR: Chest Compressions

The secondary survey is performed once resuscitation measures have been successfully performed or when it is decided that resuscitation measures are not required. In some circumstances (because of ongoing resuscitation), the secondary survey is never completed and the animal is transported directly to the veterinarian or emergency hospital during resuscitation. A general examination (from the tip of the nose to the end of the tail) should be performed.

- Determine and record:
- Pulse rate and character
- Respiratory rate and character
- Mucous membrane color
- Capillary refill time
- Rectal temperature

Examine the eyes, ears, nose, neck, mouth (if possible), chest, abdomen, back, pelvis, legs, and tail. First aid treatment should be performed as necessary during transport to the veterinarian. Taking and recording your animal's pulse is an important part of the secondary survey.



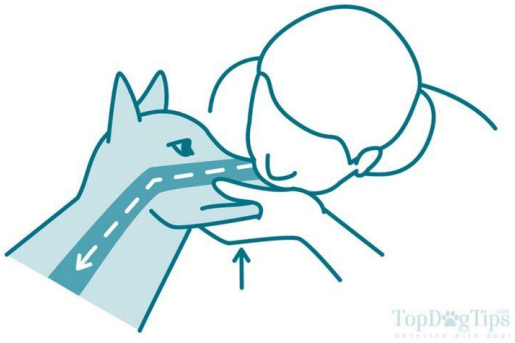


Figure 1.11:- CPR for dogs

- **Bleeding from nose: -** A nosebleed is bleeding or hemorrhage from the nose.

What to Do

- ✓ Notice if the blood is coming from one nostril (note which one) or both nostrils.
- ✓ If the animal is sneezing, note how often.
- ✓ Attempt to keep the animal calm. Encourage the animal to lie down and relax.
- ✓ Place an ice pack (covered by one or more layers of cloth) or compress to the side of the nose.
- ✓ If the nose is bleeding profusely or the bleeding lasts more than 10 minutes, seek veterinary attention.

What NOT to Do

- ✓ Do not put anything up the nose. This will likely cause the animal to sneeze. Sneezing will dislodge a clot if one has formed and the bleeding will resume.
- ✓ A bloody nose in a cat or dog may be associated with foreign bodies (foxtail awns are common), polyps, infections, poisoning, bleeding disorders, or even cancer. It is a sign whose significance should not be underestimated

Wounds: - A wound is any break in the continuity of the tissues of the body, either external or internal. Many wounds will require pain control and sedation or general anesthesia for cleaning and closure once the animal has been evaluated by a veterinarian. Some wounds, like those inflicted by another animal, can become worse before they get better as dead tissue is removed

by the body's immune system. This process can take many days or weeks and may require repeated bandaging, repeated surgeries or skin grafting for severe wounds.

- **What to Do**

✓ **Deep Wounds**

- Stop the bleeding (see the bleeding section).
- Do not attempt to clean the wound unless instructed to do so by a veterinarian.
- Protect the wound from contamination by applying a water- or saline-soaked compress. Do not remove it until instructed to do so by a veterinarian.
- Immobilize the wound to prevent further damage.
- Provide shock care if necessary.
- Obtain professional veterinary care. Transport the animal with the affected area facing up.

✓ **Superficial Wounds**

Stop the bleeding. Clean and bandage the wound as instructed in bandaging section.

- **What NOT to Do**
  - Do not apply materials (other than those mentioned) to the wound unless specifically instructed to by your veterinarian

Generally there are many other types of emergencies can, and do, occur. If you have questions concerning symptoms your animal is exhibiting, seek advice from a veterinarian.

✓ Emergency centers (where after-hours care is provided), and critical care centers (where 24-hour care is provided) are becoming more prevalent. It is recommended that you know the location and hours of operation of the closest facility.

✓ There may not be time for you to call first in some very critical emergencies, but in most cases a phone call to the emergency facility is a good idea.

✓ If there are any questions concerning your animal's health, call your veterinarian or the facility. They can make you aware of some of the possibilities



Figure 1.11:- superficial wound on dogs

- **Heat stroke**

Body temperature may be elevated because of an infection (fever), but it may also increase because of hot and/or humid conditions outside. An increased body temperature caused by environmental conditions is commonly referred to as hyperthermia, heatstroke, or heat prostration.

Hyperthermia may be a life-threatening condition, and requires immediate treatment. A dog's normal body temperature is 101.5°F plus or minus 1 degree Fahrenheit, and any time the body temperature is higher than 105°F, a true emergency exists. Heatstroke generally occurs in hot summer weather when dogs are left with inadequate ventilation in hot vehicles. However, heatstroke may also occur in other conditions, including:

a) When an animal is left outdoors in hot/humid conditions without adequate shade.
b) When exercised in hot/humid weather.
c) When left in a car on a relatively cool (70°F) day; a recent study from Stanford University Medical Center found the temperature within a vehicle may increase by an average of 40 degrees Fahrenheit within one (1) hour regardless of outside temperature.

Other predisposing factors may be obesity and/or diseases affecting a animal's airway. Keep in mind that prolonged seizures, eclampsia (milk fever), poisonings, and many other conditions may cause hyperthermia. Also, brachycephalic (short-nosed) breeds (Pekingese, Pug, Lhasa Apso, Boston terrier, etc.) may suffer from "ineffectual panter syndrome" those results in an increased body temperature that may be fatal.

Initially the animal appears distressed, and will pant excessively and become restless. As the hyperthermia progresses, the animal may drool large amounts of saliva from the nose and/or mouth. The animal may become unsteady on his feet. You may notice the gums turning blue/purple or bright red in color, which is due to inadequate oxygen.

What to Do

- ✓ Remove your animal from the environment where the hyperthermia occurred.
- ✓ Move your animal to shaded and cool environment, and direct a fan on him.
- ✓ If possible, determine rectal temperature and record it.
- ✓ Begin to cool the body by placing cool, wet towels over the back of the neck, in the armpits, and in the groin region. You may also wet the ear flaps and paws with cool water. Directing a fan on these wetted areas will help to speed evaporative cooling. Transport to the closest veterinary facility immediately.

What NOT to Do

- ✓ Do not overcool the animal.
- ✓ Most animals with hyperthermia have body temperatures greater than 105°F, and a reasonable goal of cooling is to reduce your animal's body temperature to 102.5-103°F while transporting to the closest veterinary facility.
- ✓ Do not attempt to force water into your animal's mouth, but you may have fresh cool water ready to offer should your animal be alert and show an interest in drinking.
- ✓ Do not leave your animal unattended for any length of time.

- **Fainting/Dizziness (Syncope)**

Fainting is the sudden loss of consciousness or a sudden and marked weakness. It may be associated with anything from low blood sugar to severe heart disease. Bee stings are frequently a cause of syncope.

What to Do

- ✓ Immediately position the animal with the head down and the hind quarters elevated.
- ✓ Cover the animal with a blanket to preserve body heat.
- ✓ If the animal vomits, make sure he does not inhale any of the vomitus into his lungs.
- ✓ Seek veterinary attention.

What NOT to Do

- Do not administer anything by mouth. It can be aspirated into the lungs and cause serious problems.
- Do not slap the animal or douse him with cold water trying to shock him into consciousness.
- Do not fail to seek veterinary attention just because the animal recovered quickly and seems fine now. Several of the conditions that cause syncope are extremely serious

- **Chemical Injuries**

Injury to tissue caused by contact with harmful chemicals such as lye, acids, and strong cleaning supplies.

What to Do

- ✓ Wash the contaminated area with large volumes of flowing water for at least 15 minutes.
- ✓ In the case of dry chemicals, brush them away carefully, taking special care to protect your and your animal's eyes, nose, and mouth.
- ✓ If the chemical is in the eye, flush the eye with large volumes of water or saline for
  - 15 minutes. See below for saline recipe)
  - Seek veterinary attention as soon as possible.

What NOT to Do

- ✓ Do not apply "neutralizing agents" to the skin or eyes. They can cause a chemical reaction that produces heat and cause further injury to tissues.
- ✓ Do not immerse your animal in "non-flowing" water if a dry chemical has spilled on him. These dry chemicals are usually activated by water. The water must be flowing in order to rinse the chemical away. Pure water can be quite irritating to the eyes and raw skin. It is much more comfortable for your animal if you use saline: simply dissolve 2 teaspoons of table salt in one quart of water (metric: 9 grams of salt in 1 liter of water)

- **unconsciousness**

Here is an emergency response plan for animal unconsciousness:

- ✓ **Call for Help**: First, call your veterinarian or an animal emergency hospital for guidance on how to proceed.
- ✓ **Assess the Animal**: While you wait for help to arrive, assess the animal's condition. Check their breathing and heart rate, and look for signs of injury or illness.
- ✓ **Move the Animal**: If the animal is in a dangerous or uncomfortable location, move them to a safe and quiet area.
- ✓ **Perform CPR**: If the animal is not breathing or does not have a pulse, perform CPR (cardiopulmonary resuscitation). CPR involves chest compressions, rescue breaths, and checking for a pulse periodically. Your vet or emergency clinic can provide guidance on how to perform CPR.
- ✓ **Administer Oxygen**: If you have an oxygen supply and know how to use it, administer oxygen to the animal. This can help with breathing and circulation.
- ✓ **Transport**: Once the animal is stable, transport them to the vet clinic or emergency hospital as soon as possible. It's important to remember that unconsciousness in animals can be caused by a variety of factors, including trauma, illness, and poisoning. Quick and appropriate action can be critical in saving your animal's life. Be sure to seek veterinary care as soon as possible.

1.3 Following standard guideline and OHS procedures

Performing an emergency care for animals needs a great care to the professional. To rescue an animal means not to put ones in danger, whenever possible, it’s important to use all personal protective equipments in appropriate manner. Even if someone can’t get appropriate PPE at the site of injury, it’s important to exploit any other safety equipments locally. PPE like steel toed shoes, long pants, hard hat, high visibility reflective safety vest, face shield, respirator and ear plugs plastic bags can use in any actions related with blood and related suspected infectious materials. But it doesn’t mean that these locally available equipments are capable enough to safe ones harm, but the use of such materials carefully can reduce the risk posed to the professional. What must keeps in mind is, implementation of OHS is not only for clinical or any laboratory activities. Being safe is not limited in time, place, and activities.

1.3.1. Hazard identification and risk control

A hazard is the potential for harm. If left uncontrolled, a hazard could result in injury or harm. A hazard can be a physical object, chemical, noise, radiation, extreme heat or cold, electrical energy or anything else that has the potential to cause harm.

- **Physical hazards:** are the most common and will be present in most workplaces at one time or another. They include unsafe conditions that can cause injury, illness and death. Examples of physical hazards include: bite, scratch, kick, and crush injuries from animals, electrical hazards: frayed cords, missing ground pins, improper wiring
- **Biological hazards:** come from working with animals, people or infectious plant materials. Work in cleaning, laboratories, veterinary offices and nursing homes may expose you to biological hazards. The types of things you may be exposed to include blood or other body fluids, fungi, bacteria and viruses, insect bites, Animal and bird droppings.

- **Ergonomic hazards:** occur when the type of work, body position and working conditions put strain on your body. Ergonomic hazards include: poor lighting, improperly adjusted workstations and chairs, frequent lifting, poor posture, awkward movements, especially if they are repetitive, repeating the same movements over and over, Having to use too much force, especially if you have to do it frequently.

- **Chemical hazards:** are present when a worker is exposed to any chemical preparation in the workplace in any form (solid, liquid or gas). Veterinary medicine and animal care workers are at risk of exposure to many different chemical hazards including glutaraldehyde and other disinfectants, hazardous drugs, latex, pesticides, and waste anesthetic gases. Exposure to these chemicals may occur by dermal contact (touching the skin) and/or inhalation (being breathed in). Splashes may result in chemical contact with the skin, eyes, or mucous membranes.

1.3.2. Risks to the Veterinary professional worker

When veterinarians are administering drugs to laboratory or any disease suspected animal, they may encounter the following risks:

- **Animal bites and Scratches**: is an ever present hazard that faces all employees working directly with lab animals or any diagnostic practices.
- **Protocol-related hazards**: are those hazards specifically associated with either routine operational or experiment-specific protocols. E.g. a specific viral vector carrying a transgenic (having the genetic material) for toxic production. Some general hazards also associated with protocols like the risk of fire and electrical hazard in the use of experiment-specific equipment are not included in the category of protocol-related hazard.
- **Zoonoses:** are those diseases that can be transmitted from animals to humans. Some diseases can be transmitted to the professional during animal handling and medicating practices. E.g. bovine TB, anthrax, rabies
- **Inherent hazards:** these are some potential hazards inherent in any work environment. These includes poor ergonomics, (the study of working condition, especially design of equipments, buildings etc) slips and falls, electrical safety hazard etc.
- **Allergy:** hypersensitivity reactions to the animal allergens are serious occupational health problems that developed in many individuals after repeated exposure. The guinea pigs, rabbit and mouse appear to be the most allergenic lab animals. The urinary and salivary protein from the animals fur, bedding and caging are known source of allergens.

1.3.3. Risks to the animal

During your first aid practices animals might be faced with risks like:

- Allergic reaction with some drugs and site of administration.
- Swelling at the site of drug injection site
- The needle may be broken inside the animal body.
- Drug resistance with respect to the under dosage of the drug and
- Over dosage of the drug which might result even death etc…

1.3.4. Selecting and using first aids kits

A veterinary first aid kit is a collection of medical supplies and equipment used to provide emergency care for animals. A well-stocked veterinary first aid kit should include essential items such as:

- 1" and 2" adhesive tape
- 2" roll gauze (for muzzle)
- chlorhexidine or povidone iodine (antiseptic)
- Elizabethan collar
- eye wash (saline in a squirt bottle)
- isopropyl alcohol 3% hydrogen
- peroxide (or syrup of ipecac)
- 2" and 4" gauze
- 3" x 3" or 4" x 4" gauze pads
- scissors - cotton balls and pledgets
- blanket with heat pack
- flat transport surface
- plastic food wrap (e.g., Saran- Wrap)
- petroleum or K-Y jelly
- ice pack
- activated charcoal
- tweezers
- bulb syring
- Sterile gauze,
- Adhesive tape,
- Antiseptic solution,
- Tweezers,
- Thermometer,
- Electrolyte solution
- Cotton swabs,
- Oral dosing syringe,

- Latex gloves

Other items could be added depending on what type of animals you are caring for and their specific needs. It is important to keep your veterinary first aid kit clean, well-organized, and easily accessible in case of an emergency. Additionally, it is recommended that you have basic knowledge in veterinary medicine and first aid procedures when using a veterinary first aid kit.

1.4 Safe handling of animal

It is vital that the owner adequately restrain the animal before starting any first aid procedures to ensure the safety of the owner and animal. When moving the animal, motion of the head, neck, and spine should be minimized. A flat, firm board of wood, cardboard, or thick fabric can be used to provide support**.** In addition, doctors and staff should remain calm and neutral no matter how badly the animal may behave. In 98% of cases, injuries to humans occur because someone did something unwise, became complacent while working on the animal, or did not know how to read the animal's body language**.**

When attending an animal that has been injured, it is important that the first aid provider takes steps to prevent bite wounds inflicted by the animal being treated. Many dogs, even the family animal, may bite when hurt or frightened. A muzzle is an excellent way to prevent being bitten while rendering first aid. Commercial muzzles are best, as many of them can Be used without interfering with breathing; the problem is they are not always available during a crisis.

If a restraint is not available, the first aid provider must improvise. For instance, in dogs To make a muzzle, get a rope, cord or other similar strong material (such as a necktie or a belt). Wrap the cord or rope two or three times around the muzzle, being careful not to wrap the material too close to the soft, fleshy part of the nose. The muzzle must be applied to the bony part of the nose to avoid interfering with breathing. Bring the ends up past the ears and tie the securely behind the head. These muzzles cannot be used on dogs that are having difficulty breathing, are unconscious, or have an injury to the mouth. They're also not indicated for short nose breeds (e.g., Chinese Pug, Pekingese, and Bulldog). Some injured dogs may vomit. If the dog appears to become nauseated or begins to retch, the muzzle should be removed at once.

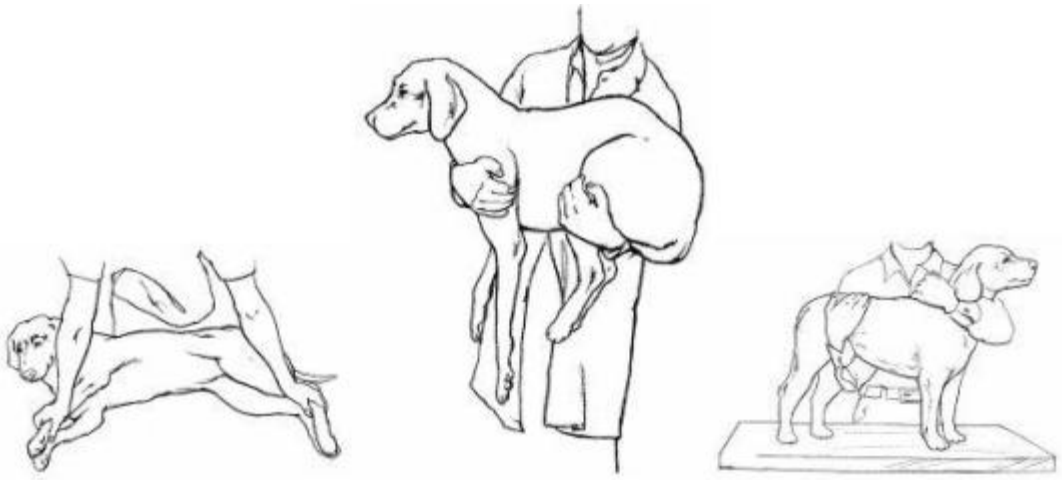


Figure 1.12:- Handling and restraining of dogs for first aid

1.5 Assessing physical condition and vital signs

Assessing the vital signs and physical condition of animals is a crucial part of providing first aid.

1.6.1. Body temperature

The temperature of the body of different animals varies widely. The temperature of the body surface is usually less than the temperature of the deeper parts. During the process of examination of mucous membrane, skin and mouth, the clinician may appreciate the rise or fall of body temperature, but the exact temperature has to be recorded with the help of a clinical thermometer. Recording of temperature helps in establishing a diagnosis of febrile disease from febrile ones. Temperature chart (T curve), if maintained properly, may help in determining the process and fate of a disease.

- **Site of recording of body Temperature**

The temperature in domestic animals is recorded in the rectum. In female animals, the vaginal temperature may also be considered but it should be borne in mind that vaginal temperature may remain high during oestrus; vaginal temperature is 0.5 degree centigrade higher than the rectal temperature of healthy animal.

- **Procedures of Temperature Taking**

The temperature is recorded with the help of clinical thermometer which consists of a mercury reservoir communicating with a thin capillary channel. A range should be from about 36 degrees centigrade to 42.5 degrees centigrade.

Procedure

a. The thermometer should be sterilized by disinfectant (antiseptics) before use;
b. It should be well shaken before recording of temperature to bring the mercury column down below the lowest point likely to be observed in different species of animals.
c. The bulb end of the thermometer should be lubricated with liquid paraffin or glycerin or soap especially in case of small pup and kitten.
d. Care should be taken so that the bulb of the thermometer remains in contact with the rectal mucous membrane.
e. The thermometer should be kept in site for at least 3-5 minutes.
f. Read the thermometer

Temperature of healthy animals may vary during morning and evening. Therefore, recording of temperature may be made twice daily to locate the diurnal variation. This can be graphed into a temperature curve (sick or healthy animal).

- **Factors which influence the change of body temperature**
  - ✓ Temperature at Exercise>at rest
  - ✓ Environmental temperature and humidity and ventilation
  - ✓ Age, species:- in smaller animals >larger; younger animals >older
  - ✓ Female>male; pregnant>non-pregnant
  - ✓ Sweating
  - ✓ Feeding
  - ✓ Stimuli (including the operation of clinical examination)
  - ✓ Local inflammation of the rectum, higher; but diarrhea/cold fluid enema/anal sphincter flaccid, lower.

Table 1.1: Normal Rectal Temperature

Animal	Range	Average
Adult draught	37.2-38.0	37.6
Foal	37.5-38.6	38.0
Ox, over 1 year	37.8-39.2	38.5
Calf, up to 1 year	38.6-39.8	39.2
Sheep	38.9-40.0	39.5
Goat	38.6-40.2	39.4
Pig, adult	37.8-38.9	38.3
Piglet	38.9-40.0	39.4
Chicken/fowl	40.8	
Duck	40.7	
Camel	35.0-38.6	37.8
Dog	37.9-39.9	38.9
Mink	39.7-40.8	

1.6.2. Pulse taking

The techniques of taking the pulse consists of placing the ball part of one or more fingers on the skin over the selected artery and applying gentle pressure until the pulse wave can be detected. In an examination of the pulse, the following properties should always be considered: pulse rate, pulse rhythm, and pulse quality.

- **Sites of pulse taking**:

Horse

- ✓ External maxillary artery
- ✓ Transverse facial artery
- ✓ Median artery
- ✓ Great metatarsal artery

Cattle

- ✓ Facial artery
- ✓ Transverse facial artery
- ✓ Median artery
- ✓ Middle coccygeal artery

Sheep/goat, dog, cat, pig, calf-femoral artery

- **Physiological factors affecting the pulse rate in normal animals:**

i. **Species**: - in general, the smaller the species, the more frequent the pulse rate is.
ii. **Size**: - within species the pulse rate is usually higher in larger individuals
iii. **Age**: - the pulse rate in very young animals is much higher than in adolescent and adult individuals of the same species. The neonatal calf, for example, has a pulse rate in the region of 120 times per minute compared with the rate of over 80 for yearling cattle and 50-80 for adult animals.
iv. **Physical condition**: - athletic animals have a less frequent pulse than non-athletic animals of the same species and type.
v. **Sex**: - in most species male animals have a slightly lower pulse rate than females.
vi. **Pregnancy**: - pregnant animals have more frequent pulse than non-pregnant ones
vii. **Parturition**: - as parturition becomes imminent, there is a further increase in pulse frequency
viii. **Lactation**: - lactating animals have a higher pulse rate than comparable ones not lactating.
ix. **Excitement**: - this may cause a considerable increase in the pulse frequency, particularly in animals unaccustomed to being handled.
x. **Exercise**: - physical exertion increases the pulse rate to an extent that varies according to the severity of the exercise and fitness of the animal.
xi. **Ingestion of food**: - eating a large quantity of food will cause a very considerable increase in the frequency of the pulse.
xii. Environmental temperature: - exposure to either very high or very low temperature produces an increase in the rate of pulse.

Table 1.2: Normal pulse rate (beats/minute)

Animal	Range	Animal	Range
Horse	28-40	Cat	110-130
Cattle	55-80	Rabbit	120-250
Calf	100-120	Chicken	250-300
Sheep/goat	70-90	Chick	350-450
Pig (adult)	60-90	Camel	25-32
Dog (large)	65-90	Ass	40-56
Dog (small)	90-120	Elephant	22-53

1.6.3. Respiration

This part of clinical examination is best performed in conjunction with the general inspection, prior to physical procedures, or the application of restraint. In selected cases, exposing the animal to physical effort may be a necessary part of the examination, as a means for determining respiratory efficiency. The clinician should stand behind and to one side of the animal, so that both the thoracic and abdominal areas of the body are in view. It is advisable to observe the animal from both sides, in order to determine whether the respiratory movements are bilaterally similar. In quiet animals, determining the frequency and rhythm of the respirations is facilitated by placing one hand on the lower part of the flank. The respiratory rate may also be determined by observing nostril movements, or more efficiently by auscultation over the thorax or trachea.

Table 1.3: Normal respiration rates (breathes/minute).

Animal	Range	Animal	Range
Horse	10-14	Dog	15-30
Ox (adult)	10-30	Cat	20-30
Ox (yearling)	15-40	Rabbit	90-100
Sheep/goat	15-30	Cock	12-20
Pig	8-20	Hen	20-36

- **Clinical Assessment of Respiration**

Types of respiration: there are three types of respiration based on the external muscles predominantly involved in the respiratory movement

- ✓ Costal respiration: in dogs and cats
- ✓ Costo-abdominal: in equine
- ✓ Abdominal: in cattle, sheep and goats

1.6.4. Other signs

Mucous membrane color: Gently press your finger on the animal's gum and then release it. The mucous membrane should turn pink within 2 seconds; if it takes longer, it could be an indication of shock or other medical conditions.

Physical assessment: Check for any signs of dehydration, wounds, bleeding, fractures, or other abnormalities. It is important to have a basic understanding of what constitutes normal vital signs and physical condition for the species you are caring for to properly assess their condition. If you notice abnormal vital signs or physical condition, seek immediate veterinary attention as soon as possible.

1.6 ABC rules of first aid

First aid is the immediate care that's given to animals whose ill or injured before emergency veterinary services (EVS) arrive on the scene. In an emergency situation, prompt first aid can be vital in helping to save a life. When you're faced with an emergency situation, there are some important things to remember as you give first aid. These are often referred to as the "ABCs of first aid."

The ABCs of first aid consist of three different components.

- **A = Airway**

A blocked airway can hamper a person's/animals ability to breath. You can help open someone's airway by doing the following:

- ✓ Place one hand on the person's/animal's head.
- ✓ Gently tilt their head back.
- ✓ While tilting their head, use two fingers from your other hand to carefully raise their chin.

- **B = Breathing**

Breathing supplies the body with life-giving oxygen. That's why it's crucial to determine whether someone is breathing or not.

To determine if a person is breathing normally, take these steps:

- ✓ Place your ear directly above the person's/animals mouth while looking down at their body.
- ✓ Check for the following signs of breathing:
  - sound of their breaths
  - feeling of their breath on your cheek
  - their coastal and Costo-abdominal moving up and down
- ✓ Continue to do this for no more than 10 seconds.

- **C = Circulation/Compression**

While breathing enriches the blood with oxygen, it's the beating of the heart that delivers this oxygen throughout the body. When organs and tissues don't receive enough oxygen, they can begin to die. If you find that person/animals isn't breathing, chest compressions are vital for restoring blood circulation in the body.

- **The 'D' of first aid**

Sometimes you may see an additional letter associated with the ABCs of first aid. This letter is D. It can mean a few different things:

- ✓ **Deadly bleeding.** Check to see whether the animals/person have severe bleeding and apply pressure to the wound until help arrives.
- ✓ **Defibrillation.** This step involves using an electrical current to restore a normal heartbeat.
- ✓ **Disability.** Check for any noticeable injuries or disabilities associated with the animals current condition. Additionally, check their level of responsiveness to things like voices or pain.

First aid care

First aid care refers to the emergency or immediate care you should provide when an animal is injured or ill until full veterinary treatment is available. For minor conditions, first aid care may

be enough. For serious problems, first aid care should be continued until more advanced care becomes available. The purpose of first aid care is to keep the victim alive through:-

- Stop bleeding
- Administer oxygen
- Minimize impact of shock by keeping animal quiet, warm and away from activity or noise
- Immobilize limb injuries, if soft tissue damage or fractures are suspected, if possible
- Hose or apply water, if available, in cases of burns or heat exhaustion
- Administration of emetics or antidotes under instruction if appropriate
- Feeding or watering as advised
- Transporting animal to veterinary assistance as soon as possible

1.7 Referring serious cases

Any animal health professional with knowledge or suspicion of notifiable diseases would be required to report it immediately due to the serious nature of these diseases and their potentially death of animals and damaging impact on a country. To refer serious cases of animal emergency, it should have contact the local animal control agency or emergency veterinary clinic. They can provide guidance on how to handle the situation and what to do next. An emergency veterinary hospital is a medical facility that provides emergency care for animals. They are open 24 hours a day, 7 days a week and are equipped to handle a wide range of animal emergencies. They can provide immediate medical attention and treatment for your animal in case of an emergency.

Referring to a veterinary referral practice for a complicated surgical/medical procedure ultimately reflects best practice. It not only increases the likelihood of a better outcome, but it also shows animal owners that you believe their animals deserve comprehensive treatment. This means that your clients will be loyal to your practice, and most importantly, ensures that every animal receives the best possible care.

By using a referral practice, you'll also be able to provide your patients with the best of both worlds. The veterinarian will have familiarity with the animal and their medical history, along with

your knowledge of your client's treatment preferences. The referral veterinarians have the expertise to carry out the procedure in the safest, most effective way.

The most important animal emergency cases that are not easily treated in the local veterinary clinic due to lack of facility and specialist of the diseases are:-

- Bleeding disorders
- Respiratory distress
- Trauma
- Gastrointestinal
- Heart failure and arrhythmias
- Seizures (including toxicities)
- Kidney injury and urinary disorders
- Metabolic diseases
- Pancreatitis

1.8 Documenting and reporting first aid support

Documenting and reporting first aid support is important for legal and safety reasons. Employers are required to carry out an assessment of first-aid needs. This involves consideration of workplace hazards and risks, the size of the organization and other relevant factors, to determine what first-aid equipment, facilities and personnel should be provided. Documenting and reporting of injuries, diseases and dangerous occurrences regulations 1995 and the health and safety (First-Aid) Regulations 1981. Documenting, recording and reporting of information are of critical importance in the effective management of an Incident and any casualties involved. Simple mnemonics focus our attention on the most important factors which helps ensure the most relevant information is communicated quickly and clearly. While we document and report the emergency and the first aid supported.

When requesting medical support it is essential that relevant and accurate patient information is provided; a correct request for medical support avoids unnecessary delay and provides the next echelon of care so they can begin to diagnose and plan their treatment before arrival. The report needs to be clear and concise, yet transfer all relevant information for documentation.

- Exact location**:** in an urban setting this would be the room number and floor of the building and postcode. In a remote setting an 8 figure grid reference or latitude & longitude.
- Type of incident**:** industrial chemical, vehicle collision, drowning etc.
- Hazards**:** both current and potential. Terrain, debris, machinery, fuel spill, fire/explosion risk, weather etc.
- Access: best route to the scene following - or avoiding - particular features.
- Number of casualties**:** ideally following triage: delayed, urgent, immediate or dead.
- Emergency Services: Required and already present
- Age
- Sex
- Breed
- Species
- History - A brief description of the accident or incident including the mechanism of injury, if appropriate.
- Illness or injury - What are the main problems?
- Cause for concern - Which problem is threatening life? Are there any other factors that will inhibit the progress of the rescuers or the recovery of the casualty?
- E.T.A. (Estimated time of arrival) - If you are transporting the casualty, how long will you take to get there? If you are requesting help, ask for this information.
- Signs and Symptoms
- Treatment given

The information can help you identify accident trends and possible areas for improvement in the control of health and safety risks. It can be used for reference in future first-aid needs assessments.

Self-check 1	

Name_____ ID_____signature_____ date_____

Directions: Answer all the questions below accordingly.

Test I: write true for correct statement and false for incorrect one (1pt each)

1) _____ a hazard can be a radiation, extreme heat or cold, electrical energy or anything else that has the potential to cause harm.
2) _____All disasters may not have some environmental impacts rather than property and life.
3) ---------- All emergencies do have immediately endangered life, health or property.
4) ----------An ***emergency*** is unexpected situation that endangers the safety of one or more animal are humans.
5) ----------Exposures to blood and other body fluids occur across a wide variety of occupations.
6) ---------- An outbreak of an infectious animal disease that threatens the national herd is an emergency situation.
7) _____Emergency services are organizations which ensure public safety and health by addressing different emergencies.
8) _____hazard cannot be eliminated rather minimized to an acceptable risk level by using engineering or administrative controls.

Test II: Short Answer Questions (2pts each)

1. Enumerate and describe the ABC rules of first aid?
2. Mention physiological factors affecting the pulse rate in normal animals?
3. Enumerate the types of respiration?
4. What are the advantages of safe handling of animals while emergency cases?

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

LG #19	LO #2- Provide emergency care to animals

Instruction sheet 2

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

- Clinic policies and procedures for the treatment of emergencies
- Patient evaluation
- Hemorrhage control and breathing assistance
- Emergency procedures and nursing care
- Reassuring casualty in caring and calm manner
- Recommend Euthanasia in cases of untreatable and sever pain

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:

- Develop clinic policies and procedures for the treatment of emergencies in consultation with the supervising veterinarian.
- Conduct patient evaluation to assess injuries and vital signs of the patient animal. Relevant procedures for hemorrhage control or breathing assistance are applied according to patient needs.
- Apply emergency procedures and nursing care as required in accordance with patient needs and OHS requirements.
- Reassure casualty in a caring and calm manner and made comfortable using available resources.
- Recommend euthanasia in cases of untreatable sever pain to relieve from further suffering, uncontrollable and profuse bleeding.

Learning Instructions:

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

Information Sheet 2

2.1 Clinic policies and procedures for the treatment of emergencies

Introduction

Veterinary clinics have different policies and procedures for the treatment of emergencies. Some clinics encourage owner visits and have daily visiting hours. It is important for veterinary practices to prepare for emergencies by identifying the risks or hazards they might face, quantifying the impact these risks may have on their operations, determining how to overcome or mitigate the potential risks, assessing available resources they might need to use in an emergency, and developing an emergency preparedness plan.

In emergency medicine, the most life-threatening problems are treated first. When you arrive at the veterinary hospital, the veterinary staff will make a rapid assessment of your animal physical condition and assign priority of care to each problem. It initiative, which created the first consensus guidelines on veterinary resuscitation, and discusses the 5 domains of CPR for dogs and cats: preparedness and prevention, basic life support, advanced life support, monitoring, and post cardiac arrest care.

Therapy must be done at the right time, in the right amount, and in the right order. Therapeutic failures are generally a result of failing to act expeditiously at a crucial moment. Emergency care often begins with the owner's initial telephone call. We assess the urgency of the animal emergency using a triage system. Triage means that we start treatment based on levels of care. If the emergency is deemed critical, it is the most immediate level, meaning that it's a dire situation.

2.1.1 Veterinary Policies and Procedures for the Treatment of Animal Emergencies at any Veterinary Clinic

- **Emergency Calls**: The clinic is open for routine appointments for all working hours and days but when there are emergency situations it should have to call any appointed phone number
- **Triage:** When an animal is brought to the clinic in an emergency situation, the veterinarian on duty will perform a triage to assess the animal's condition. This will help us determine the appropriate course of action and treatment plan.
- **Stabilization**: The animal will be stabilized before further treatment is given. This may involve administering emergency medication or fluids.
- Communication with Owners: It should understand how stressful and emotional an animal emergency can be for owners. The staff will communicate with owners regularly throughout the treatment process to keep them informed and answer any questions they may have.
- Treatment Plan: Once the veterinarian has assessed the animal's condition and stabilized it, a treatment plan will be determined. This may involve further diagnostic tests, surgery or referral to a specialist.
- Payment: Payment is required at the time of service for all emergency cases. We accept cash, credit cards, and checks with photo IDs.

2.1.2 Veterinary procedures for the treatment of emergency

The Veterinary clinic/hospital is committed to providing high-quality emergency care for animals through:-

- **Contact Information:**
  - ✓ Clinic Phone Number
  - ✓ After-Hours Emergency Phone Number:
  - ✓ Address:
- **Emergency Situations:**

Emergency situations include any sudden or severe injury or illness that requires immediate treatment, such as:

- ✓ Difficulty breathing

- ✓ Severe bleeding or open wounds
- ✓ Seizures or convulsions
- ✓ Unconsciousness or collapse
- ✓ Signs of shock (pale gums, rapid heartbeat, weak pulse)
- ✓ Inability to urinate or defecate
- ✓ Suspected poisoning or ingestion of a foreign body
- ✓ Difficulty giving birth or miscarriage

- **Emergency Procedures:**
  - ✓ Upon arrival with an animal in an emergency situation, immediately notify the receptionist or veterinary technician on duty.
  - ✓ The receptionist/veterinary technician will evaluate the animal's condition and alert the veterinarian on duty.
  - ✓ The veterinarian will assess the animal's condition and develop a treatment plan.
  - ✓ In critical cases, the veterinarian may begin treatment immediately, while stabilizing the animal for transfer to the local emergency hospital if needed.
  - ✓ If hospitalization is required, the veterinarian will discuss the plan with you and obtain your consent for treatment.
  - ✓ Throughout the emergency process, you will be notified of your animal's status and expected costs.

2.2 **Patient evaluation**

Animal patient evaluation is a detailed subjective and objective assessment that is necessary to ensure that the animal physiotherapist can correctly identify each animal patient's challenges/dysfunctions and, from there, develop an appropriate clinical plan to achieve the best outcomes for a patient. For example, when assessing a canine patient, it is essential to determine its current functional level, history and specific challenges or deficits that need to be addressed.

A primary survey is essential to identify patients that require rapid intervention to avoid rapid deterioration. Airway, Breathing, Circulation, level of consciousness and level of pain should all be rapidly evaluated. Hence the following evaluation of animals should consider while we have given emergency cases.

- **The papillary light reflex** is a test that can be used to check for neurological function in an animal emergency case. It is a simple test that involves shining a light into the animal's eye and observing the response of the pupil. If the pupil constricts in response to the light, it indicates that the neurological pathways are intact. If there is no response or if the pupil dilates instead of constricting, it may indicate a problem with the neurological system.
- **Capillary refill time** is a test that measures how well the vascular system works in your hands and feet the parts of your body that are farthest from the heart. It is also used to check the perfusion status of animals. There are many small blood vessels called capillaries in an animal's gums. When an area of the gum is pressed, blood is forced out of these capillaries. When the pressure is released, the blood should almost immediately refill the capillaries. The normal time it takes for the capillaries to refill in dogs and cats is **1.5 seconds**[3]. An animal should have a capillary refill time of less than **1 to 1 3/4 of a second**[2].
- **Mucous membrane color:** - The color of the mucus membrane in animals is an important indicator of their circulatory status during an emergency. The normal membrane appearance is moist and pink. Dry, congested membranes suggest dehydration and circulatory disturbance. The membrane color and capillary refill time (CRT) reflect the circulatory status of the animal.
- **Level of consciousness:** - The level of consciousness in animals during an emergency is an important indicator of their neurological function. The Modified Glasgow Coma Scale (MGCS) is a useful indicator of the severity and progression of neurologic dysfunction and may be a helpful prognostic indicator.
- **The hydration status** of animals during an emergency is an important indicator of their circulatory status. 5% dehydration is not detectable, but >5% is defined as "clinical dehydration" and is detectable. 10% dehydration can result in alterations to the cardiovascular system and ultimately shock and death. Since a mild degree of dehydration is not easily detectable clinically, it is wise to hydrate the animal when in doubt.
- **Checking the heart and respiratory rate** of animals during an emergency is important because it helps to catch the earliest signs of congestive heart failure before the condition

develops into an emergency situation potentially requiring hospitalization and oxygen therapy. While pulse, temperature, and respiration rate are most commonly measured and reported as part of an animal emergency, these other animal health observations can be helpful as you consider your rations, health protocols, facilities, and other management factors that impact short-term and long-term animal health.

- **Checking the temperature of animals** during an emergency helps to establish whether the animal has been struck by an infectious disease. The animal will show some common disease signs, such as standing alone, not eating well, or falling behind when the animals are moved. At this stage, it is essential to take the animal's temperature.

2.3 Hemorrhage control and breathing assistance

2.3.1. Hemorrhage control

Hemorrhage is bleeding from a damaged blood vessel. Many things can cause hemorrhage inside and outside the body. Types of hemorrhage range from minor, such as a bruise, to major, such as bleeding in the brain. If you can't stop external bleeding or suspect internal bleeding, seek immediate medical attention. The following are the methods to control external bleeding.

- **Direct pressure will control bleeding**

Direct pressure is the primary technique EMS uses to control bleeding, but this technique will only work if focused digital pressure is placed on the source of bleeding. Placing an entire palm over the bleeding is often unsuccessful because pressure is diffused over a wide surface area. By reducing the diameter of the surface through which force is applied from 10 cm (palm) to 2 cm (finger), surface area is reduced 25 times and applied pressure goes up by the same ratio. Some knowledge of anatomy is required for the fingers to press the source bleeding from deep wounds against the underlying structures. Effective digital pressure is difficult to maintain for more than a few minutes (the muscles of the fingers tire). Hemorrhage control via direct pressure is extremely challenging during transport due to constant movement of the patient and provider.

Other hemorrhage control techniques are required to transport a bleeding patient and to free the hands so that other priorities can be dealt with.

- **Pressure bandages/tourniquets**

A pressure bandage is a bandage that is applied with enough pressure to reduce or stop the flow of blood from a wound. These bandages are commonly used in emergency situations, particularly when the wound is on an extremity, such as an arm or a leg. Pressure bandages are often made of elastic material that can be stretched and wrapped around the affected area. Pressure bandages are used to control bleeding and encourage blood clotting without constricting normal blood circulation. They help:

- ✓ minimize swelling
- ✓ protect the wound from contamination
- ✓ protect the injured area from additional trauma
- ✓ prevent heat and fluid loss

There are many types of tourniquets and each one has its advantages and disadvantages. Tourniquets require proper training to apply effectively and quickly. Personnel with limited experience rarely get the initial strap application tight enough, and rely too much on the limited ability of the windlass to tighten the tourniquet.

- **Haemostatic forceps**

Haemostatic forceps are surgical tools used in many surgical procedures to control bleeding. They are designed to clamp small blood vessels for hemorrhage control. For this reason, it is common in the initial phases of surgery for the initial incision to be lined with hemostats which close blood vessels awaiting ligation. Hemostats have three functions in emergency wound care. Another use is to grasp and secure superficial fascia during undermining and débriding wounds

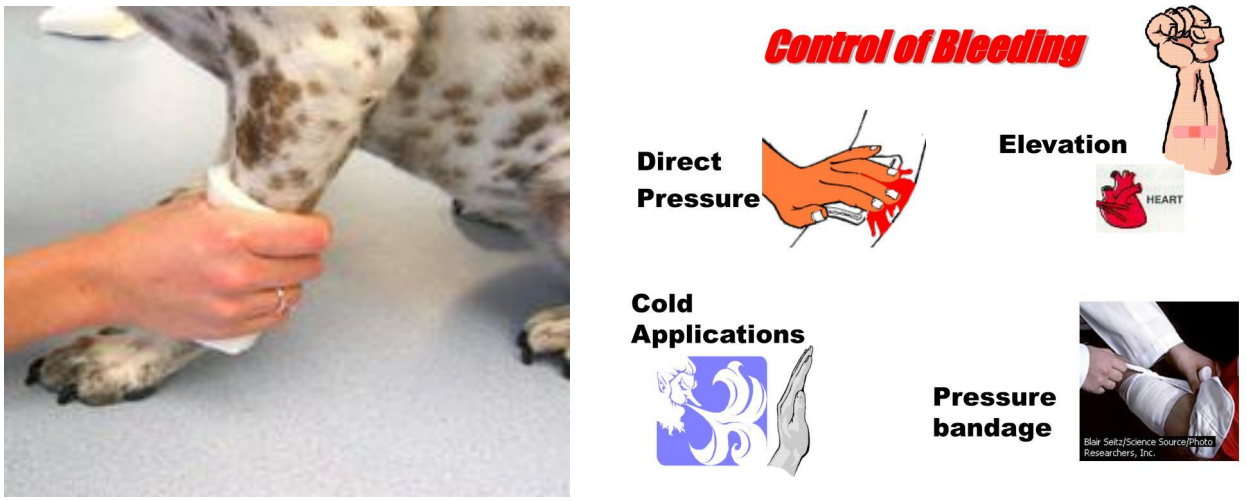


Figure 2.1:- hemorrhage control methods

2.3.2. Breathing assistance

Breathing difficulties can be caused by a number of things such as heart failure, asthma, allergic reactions, foreign objects becoming stuck in their airways, poisonings, aspiration pneumonia, paralysis of the chest wall, and brachycephalic airway obstructive syndrome just to name a few. Regardless of the underlying cause of your animal's breathing difficulties, it is always a life-threatening condition that requires immediate veterinary care. If an animal is having difficulty breathing, it is important to keep them as quiet and calm as possible and transport them immediately to the vet. If the animal suddenly stops breathing, it is possible to start to administer CPR. It is possible to follow the instructions on the CPR blog to learn how to perform it on animal s.

2.4 **Emergency procedures and nursing care**

For any emergency procedures to work well, all operators and managers must aware of the procedures and have the opportunity to test them. You should test, evaluate and modify your procedures to ensure they are working. Ensure you know your location. Be able to provide OS grid references or GPS coordinates, and access points from the main road into the forest or woodland. You should also anticipate problems that will exist in getting to a casualty, eg the need for aerial tree rescue, or releasing a casualty who is trapped below a tree or heavy equipment. Identify the personnel and equipment that need to be on site and set up how to quickly contact other people you need:-

Planning for an emergency helps you to:

- Minimize the time taken for the emergency services to reach you
- Minimize the risk to operators if there is an emergency
- Include environmental and other emergencies in your plan.

Employers and the self-employed need to assess the first aid requirements of their work. Make sure there are enough trained first aiders and facilities to help casualties of illness or injury immediately, and that an ambulance or other professional help can be summoned without delay. It should also identify which items need to be in the worksite first aid kit.

a) First aid assessment

Your first aid assessment should take account of:

- ✓ The nature of the work
- ✓ The history and consequences of injuries
- ✓ The nature and distribution of the workforce
- ✓ The remoteness of the site from the emergency services, including location, terrain and weather conditions
- ✓ Working on shared or multi-occupied sites
- ✓ Holidays and other absences of first aiders
- ✓ The presence of trainees and the public
- ✓ The possibility of medical conditions or allergies.

b) First aid kit

You should carry a personal first aid kit on you while at work. Make sure you have received suitable training on using its contents. It should contain at least one or more haemostatic dressings, a tourniquet, a pair of plastic gloves and a Resusciade (or similar device). Keep a worksite first aid kit at a central location.

c) Emergency procedures

For any emergency procedures to work well, all operators and managers must aware of the procedures and have the opportunity to test them. You should test, evaluate and modify the procedures to ensure they are working. Ensure you know your location. You should also anticipate problems that will exist in getting to a casualty, eg the need for aerial tree rescue, or

releasing a casualty who is trapped below a tree or heavy equipment. Identify the personnel and equipment that need to be on site and set up how to quickly contact other people you need.

d) Veterinary emergency management

Provides within 24 hours the critical veterinary countermeasures (such as supplies, equipment, field tests, vaccines, and support services) to ensure States have the resources to fight catastrophic animal disease outbreaks that terrorists or nature may create. Hence there are four pillars of emergency management.



Figure 2.2:- Pillars of Emergency management

- **Prevention** – actions undertaken in advance. Sometimes this is referred to as mitigation. Prevention activities should be happening all the time.
- **Preparedness** – making arrangements, creating and testing plans, training, educating and sharing information to prepare communities should an emergency eventuate. These are also ACTIONS and they are happening all the time.

- **Response** – the assistance and intervention during or immediately after an emergency. Focus is on saving lives and protecting community assets (buildings, roads, animals, crops, and infrastructure). Usually measured in hours, days or weeks.
- **Recovery** – the coordinated process of supporting emergency-affected communities

2.5 Reassuring casualty in caring and calm manner

While doing animal emergency cases in veterinary clinic or out of the theater area, it should be considered and monitored the causes of animal emergency and do the cases when the animals are restrained. There are many reasons why an animal may require emergency care. Some of the most common reasons include

- Poisoning,
- Pancreatitis,
- Difficulty breathing or choking on a foreign object
- Hit by a car or other trauma
- Fall from the roof or higher
- Inability to defecate/straining to urinate
- Vomiting or diarrhea that continues
- Distended or bloated abdomen
- Heatstroke/hypothermia
- Animal attack/bite
- Difficulty with birth (more than a few hours between puppies/kittens)
- Eye injury and more. Hence, once we know the causes of emergency and do in well handled way, there will not any hazards and risks for both the emergency workers and the patient animals.

2.6 Recommend Euthanasia in cases of untreatable and sever pain

Euthanasia is recommended in cases of untreatable and severe pain, or when the animal's quality of life is severely compromised. It is also recommended when the animal is terminally ill and there are no other options for treatment. Euthanasia is a difficult decision that animal owners may have to make when their animals are suffering from an incurable disease or condition that causes intense pain and doesn't respond to treatment, severe arthritis, progressive neurologic

disease, or incurable organ failure such as kidney, liver or heart. In some cases, lack of resources to continue supporting the animal or laboratory test procedures may also necessitate euthanasia.

Self-Check – 2	

Name_____ ID_____signature_____ date_____

Directions: Answer all the questions up on the instruction

Part I: say true if the statement is correct and false for incorrect one (1pt each)

1. Homeostatic forceps are surgical tools used in many surgical procedures to control bleeding.
2. Capillary refill time is a test that measures how well the vascular system works in your hands and feet the parts of your body that are farthest from the heart
3. Checking the temperature of animals during an emergency helps to establish whether the animal has been struck by an infectious disease.
4. For any emergency procedures to work well, all operators and managers must aware of the procedures and have the opportunity to test them

Part II: Short Answer Questions (2pts each)

1. Enumerate and discuss the four pillar of veterinary emergency management system?
2. What are the conditions of animals that will be recommended to euthanasia?
3. Describe the importance of euthanasia?
4. Enumerate and discuss bleeding control mechanisms?

Note: Satisfactory rating – 12 points Unsatisfactory - below 12 points
You can ask you teacher for the copy of the correct answers.

Operation Sheet -2

2.1 Procedures of taking temperature from dog during emergency case for giving first aid

A. Tools and equipments

I. PPE (gown, boots, gloves, head cover, apron.)

II. Temperature measuring thermometer (Digital or mercury thermometer)

III. Restraining equipments and chemicals (eg., Rope, povidone iodine, alcohol, detergents, muzzles, leashes, and harnesses, emergency case paper, Sedatives or tranquilizers may sometimes be used)

B. Steps/procedures to measure temperature

I. Wear PPE

II. Restrain the animals with muzzles, accompanied with harnesses and rope

III. Switch on the digital thermometer and insert into the mucus membrane of anal canal of the dog

IV. Wait it up to the measuring thermometer is alarming

V. Finally reading the figure on thermometer and record on emergency case paper

2.2 Procedures to stop bleeding from upper part of left sided front leg of dog during emergency case using

A. Tools and equipments

I. PPE (gown, boots, gloves, head cover, apron.)

II. Materials, restraining equipments and chemicals (clean cloth or gauze muzzles, tourniquet, leashes, and harnesses, Rope, povidone iodine, alcohol, detergents, , emergency case paper, Sedatives or tranquilizers)

B. Steps/procedures to measure temperature

I. Wear PPE

II. Restrain the animals with muzzles, accompanied with harnesses and rope

III. Apply direct pressure: use a clean cloth or gauze to apply direct pressure to the wound. If not stop the bleeding

IV. If possible elevate the wound: elevate the wounded area above the level of your dog's heart. If not stop:-

V. Use a tourniquet: A tourniquet should be placed above the wound, between the wound and the heart.

LAP TEST-2	Performance Test

Name_____ ID_____ Signature_____-Date_____

Time started: 2:30 Time finished: 3:30 local time

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

Task-1:-Take temperature from dogs during emergency case

Task 2:- Perform bleeding control methods on dog legs during emergency case.

LG #20 LO3 # Undertake euthanasia in essentials conditions

Instruction sheet 3

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

- Definition and situations for recommending euthanasia
- Methods of euthanasia
- Identify Animal intended for euthanasia
- Equipment and materials for euthanasia
- Identify Hazards associated with euthanasia
- Apply proper restraining during euthanasia
- Monitoring Euthanasia procedure
- Disposing Carcass and biological waste
- Records relating to the euthanized animal.

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:

- Explain the definition and situations for recommending euthanasia.
- Mentions methods of euthanasia and material (chemicals) use in the process
- Identify animal intended for euthanasia and decide method for euthanasia in consistent with legislative requirements.
- Keep and prepare equipment and materials required for euthanasia in accordance with legislative requirements.
- Identify, prepare and use hazards associated with the euthanasia and PPE/safety equipment in accordance with statutory requirements and industry practices.
- Restrain animal physically and apply Euthanasia in a way that minimizes its pain and distress.
- Monitor euthanasia procedure to ensure that the animal's death is rapid and without

complications or undue suffering.

- Dispose carcass and biological waste not required for further investigation/research purpose in accordance with organizational guidelines and procedures and legislative requirements
- Dispose and decontaminate, clean and store equipment and materials in accordance with standard operating procedures.
- Keep records relating to the euthanized animal.

Learning Instructions:

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

Information Sheet 3

3.1 Definition and situations for recommending euthanasia

1.1.1. Introduction to euthanasia

Euthanasia is defined as being an act of either killing or permitting the death of a terminally ill or hopelessly injured animal by using a humane, painless method for reasons of mercy. Animal euthanasia (Euthanasia comes from the Greek meaning "good death") is the act of humanely putting an animal to death, or allowing it to die, as by withholding extreme medical measures. In regard to animals, euthanasia is the act of killing an animal in a humane manner.

The primary objectives of animal euthanasia are:

- Relieving pain and suffering of the animal(s) to be euthanized
- Minimizing the pain, anxiety, distress, and fear the animal experiences before consciousness is lost
- Inducing a painless and distress-free death.

Terminologies

- **Voluntary euthanasia**: When the person who is the owner of the patient has requested.
- **Non-voluntary euthanasia**: When the person who is the owner of the patient made no request and gave no consent.
- **Euthanasia by Action**: Intentionally causing an animal death by performing an action such as by giving a lethal injection.
- **Euthanasia by Omission**: Intentionally causing death by not providing necessary and ordinary (usual and customary) care or food and water.

Voluntary and non-voluntary euthanasia can all be further divided into passive or active variants. A number of authors consider these terms to be misleading and unhelpful.

- ✓ **Passive euthanasia:** Passive euthanasia entails the withholding of common treatments, such as antibiotics, necessary for the continuance of life.
- ✓ **Active euthanasia:** Active euthanasia entails the use of lethal substances or forces, such as administering a lethal injection, to kill and is the most controversial means.

1.1.2. Situations for recommending euthanasia

A veterinarian may recommend euthanasia, which is a humane death, when other options to reduce pain and distress are no longer helpful. Euthanasia may be recommended when you least expect it, such as if your animal is diagnosed with a terminal illness or if they've been in a debilitating accident. He is experiencing chronic pain that cannot be controlled with medication. Veterinary guidance is critical in forming the decision to euthanize a farm animal, as the prognoses for life and function based on the veterinary examination can establish whether euthanasia is the most appropriate option, or whether salvage by slaughter of a chronically ill animal is a morally and financially sound option. While euthanasia is easily recognized as the only viable option in certain conditions such as fractures of the spine or severe painful trauma that cannot be relieved by treatment, the necessity for euthanasia may not be as easily appreciable with other disorders, especially by farm managers and caregivers

3.2 Methods of euthanasia

A means of euthanasia is chosen on the basis of animal species, size, tractability, excitability, and presence of painful injury, distress, and disease, restraint of the animal, protocol requirements for tissue collection or analysis, and other considerations.

Most recommendations emphasize certain factors that personnel performing euthanasia should consider when selecting the best method to use:

- Ability of the method to induce loss of consciousness and death with minimal pain and distress
- Time required to induce loss of consciousness
- Reliability
- Safety of personnel
- Irreversibility
- Compatibility with intended animal use and purpose
- Documented emotional effect on observers or operators
- Compatibility with subsequent evaluation, examination, or use of tissue
- Drug availability and human abuse potential
- Compatibility with species, age, and health status
- Ability to maintain equipment in proper working order

- Safety for predators or scavengers should the animal's remains be consumed
- Legal requirements
- Environmental impacts of the method or disposition of the animal's remains

Methods of euthanasia fall into two broad categories

a. **Physical methods** which have been used for euthanasia includes:-

- ✓ Penetrating captive bolt pistol
- ✓ Gun shot
- ✓ Cervical dislocation
- ✓ Decapitation
- ✓ Electrocutions
- ✓ Microwave irradiations
- ✓ Stunning with exsanguinations

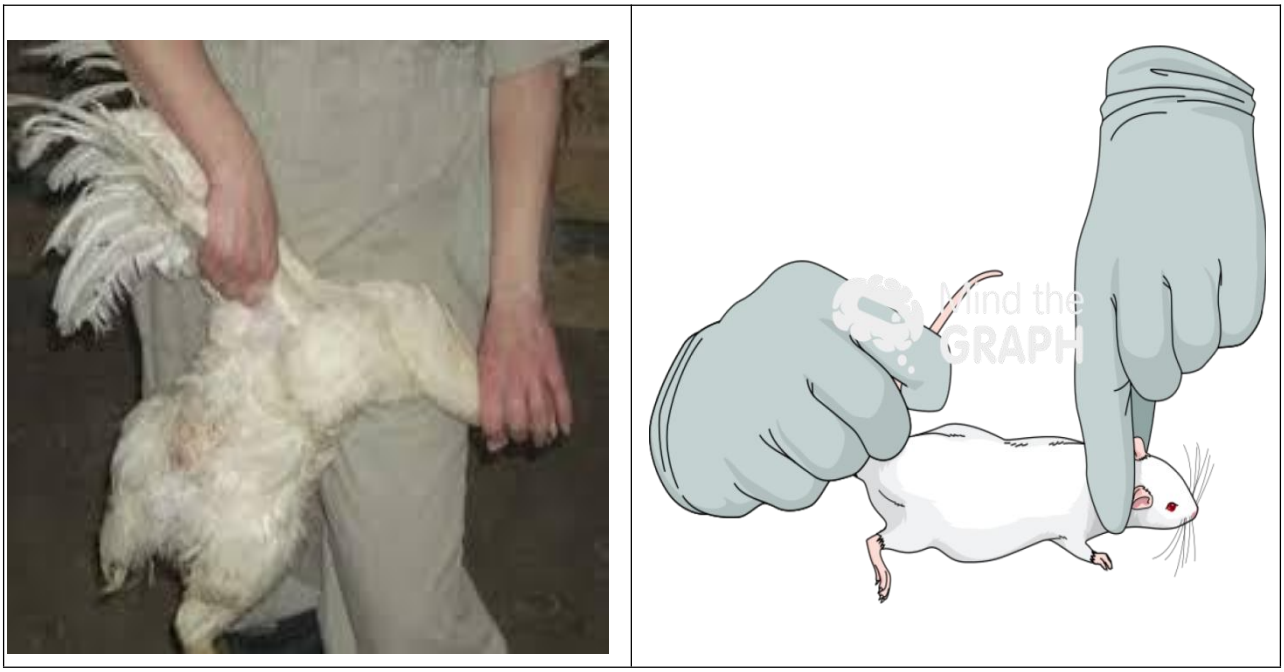


Figure 3.1:- Cervical dislocation of poultry and mice

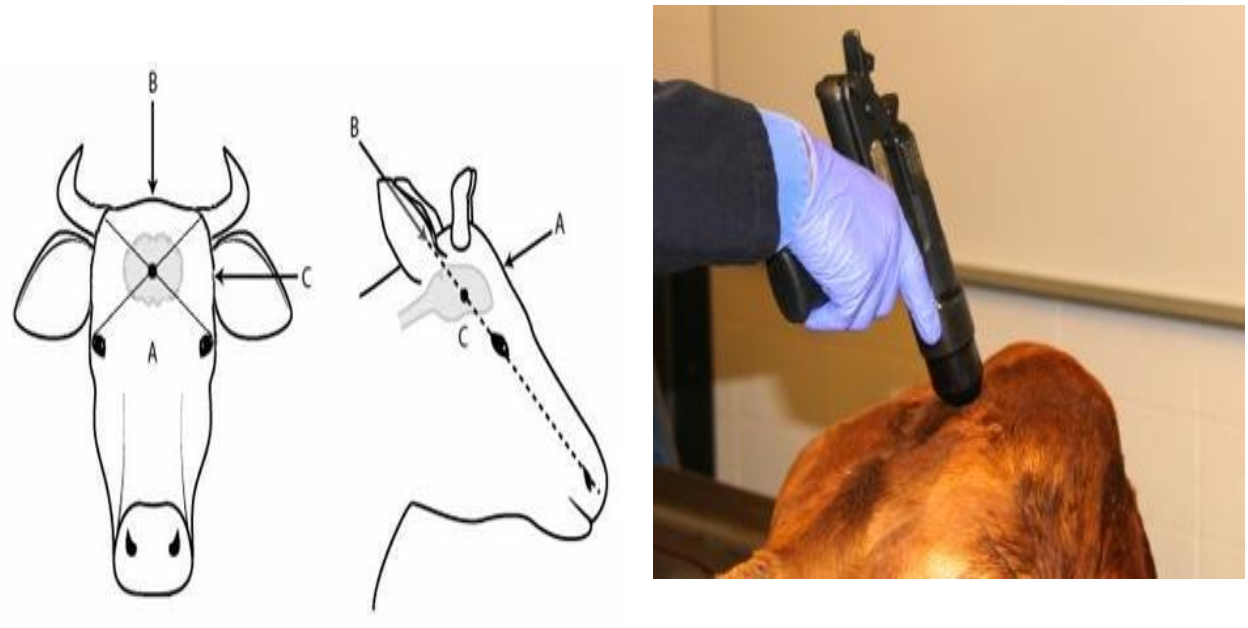


Figure 3.2:- Site of where we should consider to euthanasia in cattle

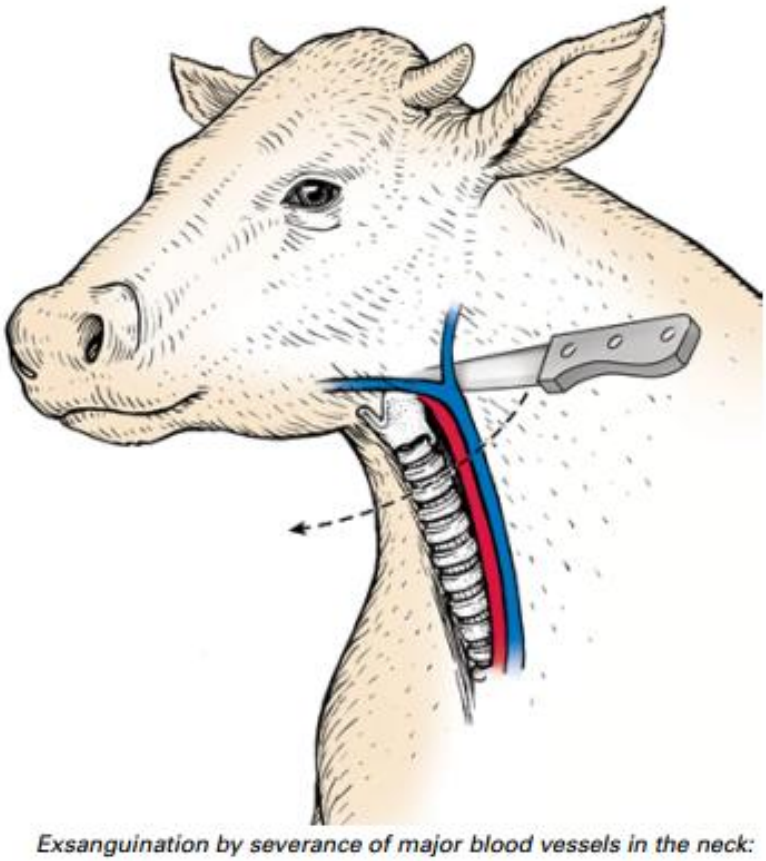


Figure 3.3:- Exsanguinations by severance of major blood vessel

b. **Chemical methods** which have been used for euthanasia includes:-

- ✓ Inhalant agent: - ether, halothane, isoflurane and enflurane
- ✓ Injectable agent: - barbiturate, ketamine, ethanol, potassium chloride.

3.3 Identify Animal intended for euthanasia

Livestock owners and others who derive all or a portion of their livelihood from animal agriculture share a moral obligation to ensure the welfare of animals. Therefore, when disease or injury conditions arise that diminishes quality of life or creates pain and suffering that cannot be effectively relieved by medical means, euthanasia is indicated. It includes the following:

- The Animals requires that at the end of a series of regulated procedures, the animals used be killed immediately after all the necessary data have been collected.
- any animal that is suffering severe pain, which cannot be alleviated, must be humanely killed immediately
- Animals may also be killed if their health gives cause for concern, if they have reached the end of their breeding life, if they are unwanted stock or if tissues and blood are required for in vitro studies.
- Fractures of the legs, hip or spine that are not repairable and result in immobility or inability to stand
- Emergency medical conditions that result in excruciating pain that cannot be relieved by treatment (e.g. terminal colic in horses, or trauma associated with highway accidents
- Emaciation and/or debilitation from disease or injury that may result in an animal being too weak to be transported
- Paralysis from traumatic injuries or disease that result in immobility
- Advanced eye disease (e.g. lymphoma or cancer eye in cattle)
- Disease conditions for which cost of treatment is prohibitive
- Disease conditions where no effective treatment is known (John's Disease in ruminants), prognosis is poor or time to expected recovery is unusually prolonged
- **Rabies suspect animals** - where there is significant threat to human health (These animals should not be killed by gunshot or other methods which result in head trauma that might cause excessive damage or loss of brain tissue and increase potential for human exposure to the rabies virus. Instead, rabies suspect animals should be attended to

by a veterinarian who can properly euthanize the animal and obtain brain tissue for diagnostic purposes.)

- **Weight loss**: loss of 20-25% (depending on attitude, weight recorded at time of arrival, and age: growing animals may not lose weight, but may not gain normally) or if not measured, characterized by cachexia and muscle wasting.
- **Inappetance**: complete anorexia for 24 hours in small rodents, up to 5 days in large animals; partial anorexia (less than 50% of caloric requirement) for 3 days in small rodents, 7 days in large animals.
- **Weakness/inability to obtain feed or water**: Inability or extreme reluctance to stand which persists for 24 hours, assuming that the animal has recovered from anesthesia.
- **Moribund state**: In rodents, measured by a lack of sustained purposeful response to gentle stimuli (example of purposeful response- weak attempt to get up; if animal is on its side, attempts should be asymmetrical in nature); in larger animals, measured by depression coupled with body temperature below 99°F (assuming in either case that the animal has recovered from anesthesia).
- **Infection**: infection involving any organ system (either overt or indicated by increased body temperature or WBC parameters) which fails to respond to antibiotic therapy within an appropriate time and is accompanied by systemic signs of illness.
- **Signs of severe organ system dysfunction non-responsive to treatment or with a poor prognosis as determined by an Research animal resource veterinarian:**
  - ✓ **Respiratory**: dyspnea, cyanosis.
  - ✓ **Cardiovascular**: blood loss or anemia resulting in hematocrit below 20%; one transfusion may be performed.
  - ✓ **Gastrointestinal**: severe vomiting or diarrhea, obstruction, intussusceptions; peritonitis, evisceration (immediate euthanasia required).
  - ✓ **Urogenital**: renal failure characterized by elevated BUN, creatinine or uroperitoneum.
  - ✓ **Nervous**: CNS depression, seizures, paralysis of one or more extremities; pain unresponsive to analgesic therapy.
  - ✓ **Musculoskeletal**: muscle damage, bone injury, locomotors deficits, etc. resulting in inability to use the limb, unless anticipated as part of the study.

- ✓ **Integumentary**: Non-healing wounds, repeated self-trauma, second or third degree heating pad burns.

3.4 Equipment and materials for euthanasia

The equipment and materials used for animal euthanasia may vary depending on the method used. The most common methods of euthanasia are injection of barbiturates or other drugs, gunshot, electrocution, and inhalation of anesthetic gases. The British Veterinary Association provides a guide on euthanasia of animals which includes legal aspects, quality of life and euthanasia. The Vermont Humane Society provides a list of equipment and supplies for animal rescue operations which includes euthanasia authorizations.

The equipment and materials required for euthanasia of animals can vary depending on the method used, but typically include:

- Chemicals: The most common chemicals used for euthanasia are pentobarbital, T-61, and carbon dioxide.
- Syringe and needle: Euthanasia by injection often involves the use of a syringe and needle to administer the chemicals into the animal.
- Restraint equipment: To ensure the safety of the animal and personnel, restraint equipment such as cages, leashes, or animal muzzles may be required.
- Anesthetic equipment: If the animal needs to be sedated before the euthanasia procedure, anesthetic equipment such as gas masks or vaporizers might be used.
- Sharps container: Used needles and syringes should be properly disposed in a sharps container to prevent injury and infection.
- Personal protective equipment (PPE): Personnel involved in the euthanasia procedure must wear appropriate PPE, including gloves, aprons, and face shields to minimize exposure to chemicals and bodily fluids. It is important to follow proper protocols and guidelines established by regulatory agencies regarding animal euthanasia to ensure ethical and humane treatment of animals

3.5 Identify Hazards associated with euthanasia

The possible hazards to humans when animals are known to be carrying a zoonotic agent or were treated with radioisotopes or toxic chemicals must be evaluated and personnel handling such

carcasses should take the necessary precautions to protect themselves and others. Biological hazards for people during animal euthanasia include exposure to blood and body fluids. Whereas, physical hazards for people during animal euthanasia include exposure to sharp objects, scratching, biting, kicking and inhalation of gases. Care should be taken when disposing of carcasses and other waste (for example water in which agents have been dissolved) that it does not provide any danger to others or the environment.

Chemical methods (except carbon dioxide) must not be used on animals destined for consumption or where the carcass may enter the food chain. Operators must ensure that they comply with national and international legislation. The equipment used to deliver and maintain this high concentration must be in good working order and in compliance with state and federal regulations. Leaky or faulty equipment may lead to slow, distressful death and be hazardous to other animals and to personnel. Most of these agents are hazardous to personnel because of the risk of explosions:

- (eg, ether), narcosis (eg, halothane),
- Hypoxemia (eg, nitrogen and carbon monoxide),
- Addiction (eg, nitrous oxide), or health effects resulting from chronic exposure (eg, nitrous oxide and carbon monoxide).

3.6 Apply proper restraining during euthanasia

For animals those to be euthanized and have accustomed to human contact, gentle restraint (preferably in a familiar and safe environment), careful handling, and talking during euthanasia often have a calming effect and may also be effective coping strategies for personnel and animal owners.

Animal handlers and veterinary professionals euthanize animals in their care and work and they should follow different animal restraining techniques. Because euthanasia results in the death of an animal and involves a lethal agent, it is inherently dangerous for operators. Euthanasia technicians must know how to control the animal and understand normal animal behavior, the effect of handling, and how the agents work. Appropriate animal control is possibly the most important step, and the degree of control necessary depends on the animal and the chosen agent.

Handlers should be trained in how to administer the agents. Trainers must fully explain why the animals must be euthanized, and operators should be allowed to refuse to euthanize animals. Everyone should be trained to recognize signs of excessive exposure to or abuse of euthanasia agents and take the necessary steps should an incident occur.

3.7 Monitoring Euthanasia procedure

All animal euthanasia must be performed by appropriately trained personnel approved on the Animal Protocol. All euthanasia procedures must be continuously monitored by the person(s) performing the procedure until confirmation of euthanasia is complete. Regardless of the method of euthanasia used, death must be confirmed before disposal of the animal. The following should be used to evaluate consciousness or confirm death.

- Lack of a heartbeat
- Lack of respiration
- Lack of a corneal reflex
- Presence of rigor mortis
- Loss of colour in mucous membranes
- Glazing of eyes
  - ✓ The presence of a heart beat can best be determined with a stethoscope placed under the left elbow. Please note that a pulse is usually not palpable under such circumstances and should not be used to confirm death.
  - ✓ Movement of the chest indicates respiration but respiration rates may be very erratic or absent in unconscious animals. Therefore, one must be cautious in the interpretation of respiration for confirmation of death.
  - ✓ One may test for evidence of a corneal reflex by touching the surface of the eyeball.
    - Normal or conscious animals will blink when the eyeball is touched
    - The eye should remain open and the lids should not move.
  - ✓ Loss of colour in mucous membranes. The mucous membranes become pale and mottled, there is no refill after pressure is applied and they become dry and sticky

This again may be more useful in the larger species where the mucous membranes in the mouth are easily accessible.

- ✓ Glazing of eyes. This will occur rapidly after death. The cornea loses its clear moist appearance and becomes opaque, dry and somewhat wrinkled. Absence of a corneal reflex, failure to detect respiration, and absence of a heart beat for a period of more than 5 minutes should be used to confirm death. An alternative is to observe the animal over a period of several hours.
  - Lack of movement,
  - Absence of a heartbeat, respiration, or corneal reflex over an extended period of time provides further confirmation of death.

Confirmation of loss of consciousness and death in Birds: The confirmation of death of the bird is critical no matter what method of euthanasia is chosen. The termination of reflexes in the head area can be used to confirm loss of consciousness. The following methods can be used to confirmed unconsciousness:

- ✓ Lack of response to a hard pinch delivered to the comb, wattles, or snood
- ✓ Lack of blink reflex when the eye is touched

The following signs can be used to confirm death:

- ✓ Cessation of respiration
- ✓ Cessation of heartbeat:- A lack of heartbeat and lack of respiration for five minutes should be used to confirm death

3.8 Disposing Carcass and biological waste

The proper disposal of carcasses and biological waste after euthanasia of animals is important to prevent disease transmission and potential environmental contamination. The disposal method may depend on several factors such as the species of animal, state or local regulations, and the type of euthanasia performed.

Disposal should take into account regulations, disease control and drug residues once death has been confirmed the animal should be disposed of in accordance with the local and/or national regulations. These rules should be obtained from the local municipality or relevant animal health/ environment departments in advance and all operators should comply with the necessary procedures. There are several methods for disposing of carcasses and biological waste from euthanized animals. Selection of the most appropriate disposal method depends on number of carcasses, potential environmental impact, climatic conditions, and other factors. Proper disposal

methods include aboveground, belowground, single-use burial area, belowground, repeated-use burial area, incineration, and disposal in a licensed landfill. The preferred method of disposal of deceased animals, including euthanized animals, is cremation. When cremation is not practical, disposal in a Class I landfill is preferred. Other options for carcass, tissue, and waste disposal include incineration/burning and burial, rendering, landfill, fermentation, and biocremation (alkaline hydrolysis), which may be possible on-site or by external contractors.

This is especially important for disease control. Moreover, many of the injectable agents used for euthanasia may leave residues in animal carcasses. These drug residues may pose a threat to other animals in the event that the carcass is eaten and may cause localized contamination upon carcass decomposition. Suspect rabies cases require cautious handling and compliance with reporting regulations Special precautions should be taken when handling the carcass of any animal suspected of carrying rabies, including the use of protective clothing: gloves, overalls, eye goggles and protective shoes.

The carcass should be sealed in a plastic bag, as the rabies virus can remain active for some time after death. The external surfaces of the carcass can remain infective for several hours after death, and the internal organs can remain infective for several weeks depending upon environmental temperature, so burial is not recommended. National or local regulations may require that the carcass, head or a sample of brain tissue are sent to a public health authority laboratory for testing and surveillance.

Disposal of dead animals

- Rendering
- Incidental animal Burial (Burial)
- Composting
- Incineration

Rendering

Delivery of the carcasses to a rendering company is the preferred method for disposing of dead animals.

Incidental Animal Burial

The incidental burial of animal carcasses is considered to be the burial of the carcasses at the same location where the animal lived, including the burial of family animals or a small number of large animals carcasses in farm locations.

N.B - Ensure that the burial pit is or has:

- It is recommended that the burial be at least 75 feet (23 m) from any water supply and
- Four feet (1.2 m) above seasonal high groundwater table to maximize aerobic decomposition.
- The grave is covered with sufficient soil to avoid disturbance by other animals.
- It is further recommended that ―quick lime‖ be applied during burial to reduce odors to speed up decomposition and deter (prevent) scavengers and insect infestation;
- A minimum 0.6 meter (2 ft) of soil covering the carcasses (offers protection from scavengers that will drag the carcasses around, creating both a nuisance and a possible health hazard).

C. Composting

Operations using composting of mortalities must be designed and managed in such a way that they do not cause pollution. An aerobic environment must be maintained, and all material must be heated throughout to a temperature of 550C (1300F) for at least three days for adequate reduction of pathogen levels.

Where composting is employed for dead animal disposal, they must:

- Be of sufficient capacity to dispose of normal mortality rates;
- Have all contaminated runoff collected, and clean surface water directed away from the composting facility;
- Be located to take the farm residence and any neighboring residences into account. While offensive odors are not usually generated in the composting process, the handling of dead livestock and compost on a daily basis may not be aesthetically pleasing.

D. Incineration

Incineration is an acceptable method of disposal if performed properly. For the dead animals to be burnt without creating an odor problem, the temperature of the incinerator must be sufficiently high. Where incinerators are employed for dead animals' disposal, they must:

- ✓ Where possible, be located so that prevailing winds carry exhaust fumes away from neighbors;
- ✓ Have sufficient capacity so that all odor levels stay within tolerable limits;
- ✓ Be 50 m (160 ft) minimum from wells or domestic water intakes;
- ✓ Be fire safe; and,
- ✓ Consume all material fed into them.

E. Chemical Digestion or Inactivation: Certain chemicals can be used to dissolve or inactivate the carcass. One example involves using lye water (a solution of sodium hydroxide) to dissolve the carcass. It is important to follow the guidelines and regulations set by local authority before performing any animal euthanasia or disposing of animal remains.

3.9 Records relating to the euthanized animal

Records relating to the euthanized animal are kept by the veterinarian who performed the procedure. The records should include the date and method of euthanasia, the name of the animal, and the name and signature of the person who performed the procedure. Keep records of animals that are euthanized, and the reasons why they were euthanized. These records help shelters understand the circumstances that lead to an animal being euthanized, and provide valuable information that can help prevent the same situation from occurring again. The primary purpose of euthanasia is to relieve suffering.

In euthanasia, the following information's and documents are recorded properly:

- The consent form
- The method used to euthanize the animal
- Appropriate management of the dead carcass. It's crucial to report any disease which makes you to decide an obligatory (non voluntary euthanasia) to the responsible body. This is important to make a survey more on the disease and take appropriate mitigation action.

Westlock Veterinary Center

EUTHANASIA CONSENT FORM

Date: _____ Name of Animal: _____

Owner: _____ Species: _____

Address: _____ Breed: _____

Telephone: _____ Color: _____

Age: _____

I, the undersigned, certify that I am the owner (or an authorized agent for the owner) of the above request, consent to, and order euthanasia to be performed on the said animal. To the best of my knowledge, and belief, this animal has not bitten any person or animals during the past fifteen days and has not been exposed to rabies. I give Doctor _____ (his/her) agents, and representatives) full and complete authority to euthanize and dispose of the said animal in a humane manner and in accordance with the rules and regulations of the establishment. Furthermore, I forever release the doctor or representatives from any and all liability of the said euthanasia.

Signature of Owner:_____

Signature of Witness: _____

PLEASE INDICATE YOUR DECISION FOR CARE OF REMAINS BY INITIALING BELOW:

____ Take the body home immediately after euthanasia

_____ Communal Cremation (ashes not returned)

_____ Private cremation (remains will be returned to WVC for pickup by owner unless otherwise specified.
Urn type: _____ size: _____ name plate: _____

_____ Please hold remains pending our decision. If I have not informed WVC of our decision within 10 days, I authorize communal cremation.

10004 - 94A Ave. Westlock, AB T7P 2M9
Ph: 78-349-3663 Fax: 780-349-4323
Dr. Jim Lawrence ~ Dr. Roy Lewis ~ Dr. Trevor Jackson ~ Dr. Tannis Jackson
Dr. Collin Lawrence ~ Dr. Melissa Hittinger

Figure 3.4:-. Animal euthanasia consent form

Self-Check – 3	Written test

Name_____ ID_____signature_____ date_____

Directions: Answer all the questions below according to the instruction

Part I: Say true for correct statement and false for incorrect one (1pt each)

1. Passive euthanasia entails the withholding of common treatments, such as antibiotics, necessary for the continuance of life.
2. A method of euthanasia is chosen can vary on the basis of animal species, size, tractability and excitability
3. Care should be taken when disposing of carcasses and other waste that it does not provide any danger to others or the environment.
4. Delivery of the carcasses to a rendering company is the preferred method for disposing of dead animals.
5. Record keeping of animals that are euthanized and the reasons why they were euthanized is very important to trace troubles.

Test II: Short Answer Questions (2pts each)

1. What is euthanasia?
2. Enumerate and describe the methods to confirmed death of animals?
3. Describe hazards associated with euthanasia?
4. What types of animal intended for euthanasia?
5. What the two types of methods of euthanasia?

Note: Satisfactory rating - 15 points Unsatisfactory - below 15 points
You can ask you teacher for the copy of the correct answers.

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AKNOWLEDGEMENT

Ministry of Labor and Skills wish to extend thanks and appreciation to the many representatives of TVET instructors and respective industry experts who donated their time and expertise to the development of this Teaching, Training and Learning Materials (TTLM).

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