Unit 4

Maintaining Health and Safety Standards at the Workplace

171209CH04

Introduction

Dairy farming is a labour-intensive and time-consuming job. Various kinds of risk are involved while carrying out routine farm operations. The risks are related with handling of animals and equipment, and transmission of diseases from animal to animal, animals to humans and vice versa. An animal may suffer from various diseases and infections. This necessitates a dairy farmer to have knowledge of some first aid measures that may help save the life of the animal and also reduce its pain, thereby, preventing its condition from deteriorating further and aiding to its speedy recovery. The dairy farmer, therefore, needs to understand the biosecurity measures that must be adopted in a dairy farm. This Unit deals with the health and safety measures that need to be adopted in a dairy farm.

Session 1: Hygiene and Biosecurity in a Dairy Farm, and Disposal of Carcass

Cleanliness and hygiene in a dairy farm

Cleanliness refers to the removal dirt and debris, whereas, hygiene can have a broader meaning. In dairy farming, particularly, when livestock are raised in

confinement, cleanliness is of utmost importance for their health. However, it is not the sole factor. The focus is also on the floor of the shed, milking equipment, surroundings, etc. Cleanliness and hygiene are directly related to Somatic Cell Count (SCC) present in milk.

Fig. 4.1: A clean animal shed

Safe handling of equipment and animals

The different kinds of risk involved in dairy farm operations are depicted in Fig. 4.2. Prior to performing manual jobs, assess the risks and follow the recommended safe practices.

- Plan and design work surfaces for safe and comfortable working.
- Store objects for regular use safely in easily accessible areas.
- Move large and heavy equipment carefully using lifts, trolleys, etc.
- Keep yards, housing and milking areas clean and dry to avoid tripping and slipping.
- Ensure that the gates open smoothly.
- Avoid slippery surfaces while handling and moving animals.
- Do not wear slippery footwear in the work area.

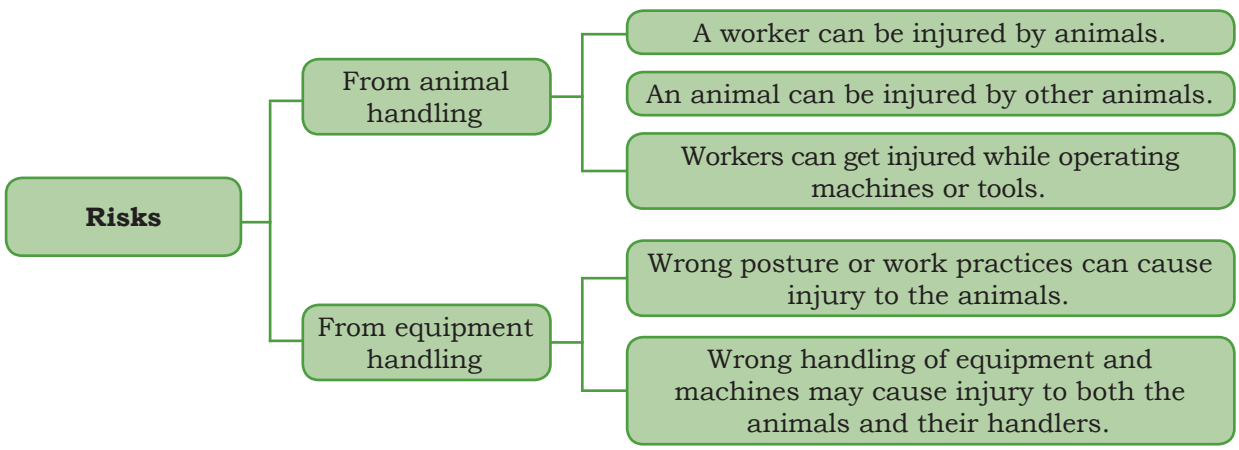

Fig. 4.2: Risks in a dairy farm

- Keep all equipment and tools at their designated places after use.
- Do not leave tools and equipment unattended in the farm.
- Reduce risk to bystanders while operating machines or tractors, and moving or handling the animals.
- One must communicate with the help of hand signals and signalling tools while working with noisy machines.
- Follow all government rules and environmental regulations at the workplace.
- Have clear work instructions and train the workers to reduce risks of accidents and hazards.
- Carry out mock drills to check the functioning of emergency equipment.
- Keep oneself updated on government regulations and schemes for efficient working and support.

Biosecurity

It refers to institutional and personal security measures to prevent the release of pathogens and infectious diseases in the environment. Hence, biosecurity involves actions to reduce chances of infectious diseases being carried to a dairy farm by people, animals, equipment or vehicles. It also includes adopting preventive measures to reduce chances of transmission of diseases when farmers, workers or animals exit the farm. Some of the biosecurity measures that need to be adopted to check the spread of diseases and infections in animals are as follows.

Fig. 4.3: Signboard showing restricted entry to a farm

Restricted access to farm

A livestock farm must be secured by fences or walls to check unauthorised entry of people or stray animals (Fig. 4.3).

Provision of footbath

A footbath, containing disinfectants like phenol or lime powder, must be maintained at the entry and exit gates of the farm to prevent the spread of pathogens (Fig. 4.4).

Fig. 4.4: Footbath at the entry of a farm

Wear personal protective equipment

Animal workers and veterinarians must wear personal protective equipment, such as apron, gloves, mask, goggles and gumboots while handling the animals. Besides, they must wash their hands with water and an anti-bacterial soap and sanitise them frequently, especially, before and after coming in contact with the animals.

Cleaning and disinfecting the farm

One must follow these steps to clean and disinfect the farm premises.

- Remove used bedding and waste material from the farm (Fig. 4.5).
- Clean the animal shed floor and walls with detergent and water (Fig. 4.6).
- Spray disinfectants like phenol or bleaching powder on the floor and walls of the shed.
- Clean the equipment, feed tubs and buckets meant for animals with detergent and water.

Fig. 4.5: Farm workers cleaning a paddock

Fig. 4.6: A farm worker cleaning a shed with water

- In case of a disease outbreak, the farm must be fumigated with formalin and potassium permanganate crystals.
- Waste generated in the dairy farm, such as manure, feed, debris, etc., must be disposed of appropriately (burried or burnt).

Disposal of carcass

Death is normal in a dairy farm. Despite efforts to keep the animals healthy, some die on the farm due to diseases or accidents. A large number of animals may die because of natural disasters like flood, storm, extreme heat or cold and drought conditions. Deaths may also be attributed to chemical or toxic agents. Dead animals and other wastes (afterbirth or placenta) may pose a risk to biosecurity, and therefore, prove to be hazardous to the environment. Besides, they may even attract wild animals and stray dogs into the farm. Putrefaction of carcass results in gradual dissolution of tissues into gases, liquids and salts as a result of actions performed by bacteria and enzymes. The carcasses need to be disposed of appropriately and promptly so as to minimise soil and water contamination, checking the risk of outbreak and spread of diseases.

The various methods of carcass disposal are shown in Fig. 4.7. Among these, burial and open air burning are most commonly used for disposing carcasses.

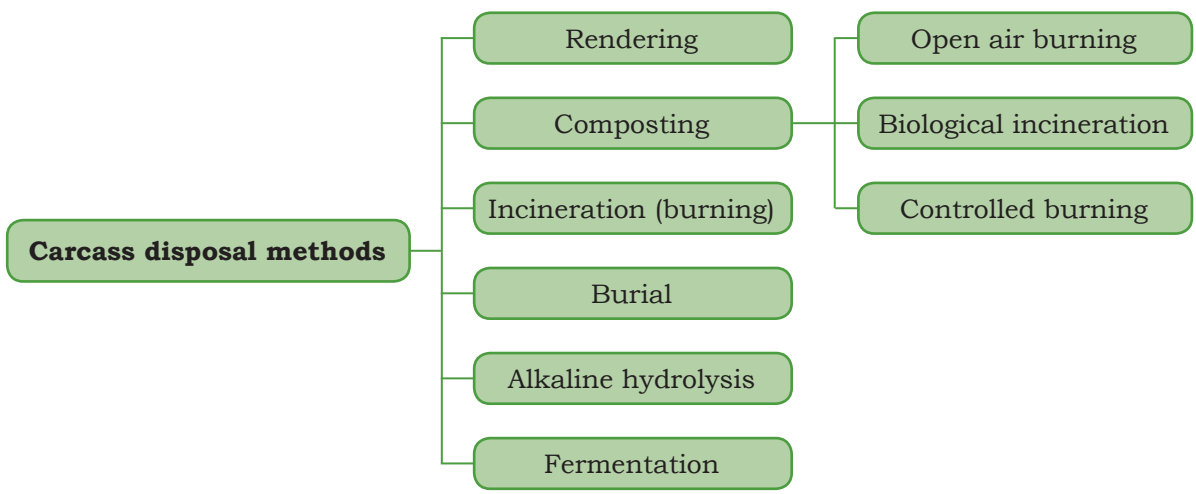

Fig. 4.7: Various carcass disposal methods

Burial

It means placing a carcass in a pit, i.e., below the ground surface and covering it completely with soil and lime. It is preferred as it is quicker, cheaper, hygienic and easy to execute. It is the most convenient method of disposing of a large number of carcasses. It is preferred when infectious agents are involved in the death of animals. A burial site or ground must be about 100 metre away from water sources like stream, pond or well. The carcass must be covered with at least two inches of top soil and lime after its placement in a pit.

Incineration (burning)

Incinerator is a machine fuelled by natural gas or electricity used for carcass disposal. There are three methods of incineration—open air burning, biological incineration and controlled burning. Open air burning is the most common method. It requires combustible material, such as timber and straw as fuel additives, to achieve the required temperature to completely incinerate the carcass. Smoke from such fires can be high in particulate matter and produce odour if the carcass has not burnt completely. Animal carcasses having high fat content like pigs are burnt much faster and require less fuel. The other two methods of carcass disposal are less common.

Composting

It refers to controlled decomposition of organic material. It is a process of aerobic microbiological decomposition conducted in open or closed systems. The process produces carbon dioxide, water vapour, heat and compost. 'Composting' is considered to be one of the most effective environment friendly methods of carcass disposal as the end product can be utilised as fertiliser.

Rendering

It is a heat-driven process, wherein, the carcass is exposed to a temperature of around 130 °C under pressure for killing pathogens. It is an environment friendly method of carcass disposal as it recycles animal protein from the carcass back into usable form as meat or bonemeal.

Fermentation

This process is a closed system of anaerobic microbiological decomposition, which requires prior mechanical and thermal treatment. It produces biogas. This process does not inactivate pathogens but, typically, uses non-dried rendered product as input material.

Alkaline hydrolysis

Also called 'tissue digestion', alkaline hydrolysis is the latest technique for carcass disposal. The only by-product of the process are mineral constituents of the carcass's bones and teeth. The bone remnants can be collected and reused as calcium phosphate powder (sterile bonemeal). The process requires specialised equipment and works at 150 °C for three hours.

Practical Exercise

Activity

Demonstrate the cleaning and disinfection of a dairy farm.

Material required: cleaning appliances, disinfectants, notebook, and writing material

Procedure

- Visit a nearby dairy farm.
- Remove waste from the farm by using water and other cleaning material.
- Spray disinfectant, such as phenol or bleaching powder, on the floor and walls of the farm.
- Clean the equipment, feed tubs and buckets with detergent and water.
- Write down step-by-step procedure of cleaning the farm in your notebook and present it before the class.

Check Your Progress

A. Multiple Choice Questions

1. Bleaching powder is a _____.
   (a) disinfectant
   (b) antibiotic
   (c) antiseptic
   (d) detergent

2. What are the steps involved in cleaning and disinfection of a farm premises?
   (a) Scrubbing and removal of waste
   (b) Cleaning with detergent and water
   (c) Spraying disinfectant
   (d) All of the above
3. A carcass can be disposed by _____.
   (a) burying
   (b) burning
   (c) incineration
   (d) All of the above
4. What must be kept in mind while disposing of a carcass?
   (a) Wear personal protective equipment
   (b) Avoid direct contact with the animal's blood
   (c) Avoid contact with the animal's parasites
   (d) All of the above
5. Biosecurity means _____.
   (a) security of the farm premises
   (b) personal security
   (c) preventing the release of pathogens in environment
   (d) All of the above

B. Fill in the Blanks

1. _____ refers to institutional and personal security measures to prevent the release of pathogens and infectious diseases in the environment.
2. The burial ground must be about _____ metre away from a water source.
3. _____ is a machine fuelled by natural gas or electricity used for carcass disposal.
4. _____ is a closed system for mechanical and thermal treatment of carcass under pressure.
5. A carcass must be covered with a layer of lime and soil in _____ method of disposal.

C. Mark 'True' or 'False'

1. Incineration is a cheap method of carcass disposal.
2. A footbath must be maintained at the entry and exit gates of an animal shed to prevent the spread of pathogens.
3. An animal shed must have too many visitors.
4. A farm need not be made secured by fences and walls.
5. In case of a disease outbreak, a farm must be fumigated with formalin and crystals of potassium permanganate.

NOTES

D. Match the Columns

A	B
1. Footbath	(a) Restricted access
2. Personal Protective Equipment	(b) Phenol or slaked lime
3. Farm waste	(c) Gloves
4. Carcass	(d) Manure
5. Biosecurity	(e) Burying

E. Crossword

								[1]R	
			[2]A					E	
[3]C		M		O		T	I	N	G
	[4]B	U		I	A	L			
			O						
[5]P	H		N	O	L				
								I	
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								G	

Across

3. Controlled decomposition of organic material.
4. Placing a carcass below the ground surface and covering it completely with soil and lime.
5. A disinfectant used in the footbath at the entry and exit gates of an animal shed to prevent the spread of pathogens.

Down

1. It is a heat-driven process, wherein, the carcass is exposed to a temperature of around 130 °C.
2. It kind of Personal Protective Equipment.

Session 2: First Aid for Dairy Animals

Fig. 4.8: A veterinarian checking a cow's temperature

First aid is the immediate treatment given to animals and humans suffering from sudden illness or injury. In the dairy sector, first aid can be administered in case of emergencies that require immediate attention and action by an animal owner or animal health workers. It can be administered in case of infectious and non-infectious diseases, wounds, poisoning, electrocution and burns, etc. It aims to save an animal's life, minimise its pain, prevent its condition from getting worse and aiding to its recovery.

Transmission of infectious diseases

Infectious diseases are transmitted from animal to animal or from animal to people by direct or indirect contact. Viruses, bacteria, parasites and fungi cause these diseases. There are five main routes of disease transmission (Fig. 4.9)

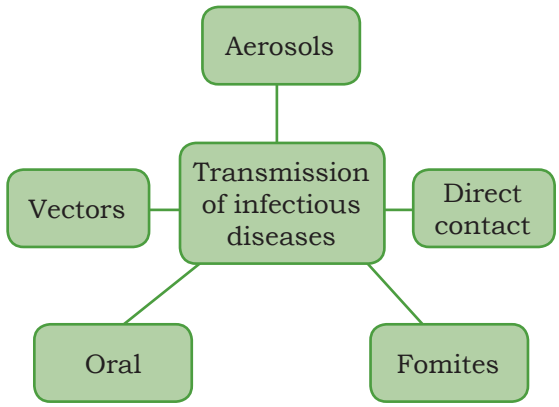

Fig. 4.9: Five routes of disease transmission

Routes of disease transmission

Aerosols

These refer to droplets sprayed by an infected animal while coughing and sneezing, which can spread infectious diseases in other animals and humans. Disease causing agents present in these aerosol droplets are passed from the infected animal to a susceptible healthy animal or humans.

Direct contact

In this case, a disease is transmitted from an infected animal or environment to susceptible animals through physical contact (Fig. 4.10). Infection causing organisms can enter the animals through open wounds, mucous membranes or skin, blood, saliva, nose-to-nose contact, rubbing or through bites of the infected animal. Diseases can also spread through venereal contact (from animal to animal through coitus) and also spread through in-utero route (from mother to offspring during gestation).

Fig. 4.10: Contact with infected animals can transmit diseases in both humans and animals.

Fig. 4.11: Contaminated feed is a possible route of transmission of diseases.

Fig. 4.12: Contaminated water is a possible route of transmission of diseases.

Oral

Feed and water are sometimes contaminated with infection causing agents passed through saliva, nasal discharge, urine and faeces of the infected animal. Consumption of contaminated feed or water can transmit the disease to susceptible healthy animals (Fig. 4.11 and 4.12).

Fomites

Some infectious agents can live for a short span on inanimate objects like equipment, feed and water troughs, fencing, etc. When a healthy animal comes in contact with such objects, i.e, those having fomite presence, these infectious agents are transmitted to it. It is an indirect route of disease transmission.

Vectors

A vector acquires an infectious agent from a diseased animal and transmits it to healthy animals either by biting or sucking their blood. Flies, ticks, mosquitoes, etc., are common vectors.

Preventing transmission of diseases

Some of the practices followed for preventing the transmission of diseases from infected to healthy animals in a dairy farm are as follows.

Isolation of sick animals

All sick animals need to be isolated immediately to avoid direct contact with healthy animals.

Avoiding overcrowding of animals

The animals must be kept or tied at an optimal distance from each other so as to prevent direct contact and overcrowding, thereby, checking transmission of diseases.

Regular cleaning and disinfection of farm premises

Regular cleaning and disinfection of farm premises and fomites must be carried out to reduce incidents of transmission of infectious diseases.

Disinfection of farm equipment and vehicles

All farm equipment must be cleaned and disinfected to minimise chances of transmission of diseases through inanimate objects. Vehicles used for transporting animals can serve as a fomite ground, and hence, must be cleaned and disinfected on a regular basis.

Restricted entry to isolated sheds

Isolated sheds are areas, where sick animals are kept. These areas must have restricted entry in order to reduce chances of transmission of diseases to healthy animals and humans. The staff working in isolation sheds must take adequate precautions. They must wear personal protective equipment like full clothing, gloves, goggles, mask and gumboots.

Controlling transmission of diseases

Transmission of infectious diseases to other animals and humans can be controlled by maintaining hygiene in the shed and farm premises, and cleaning a diseased animal's body parts like muzzle, mouth, hooves, feet, etc., with an antiseptic solution. Cleaning and washing the body parts of the diseased animal with an antiseptic solution is important for treating infections, killing surface bacteria and checking the transmission of infection in other animals and humans.

Antiseptics

These are chemical agents that slow or stop the growth of microorganisms (germs) on the external surface of the diseased animal's body and mucous membranes, and hence, help prevent the spread of infections.

Fig. 4.13: Potassium permanganate is available in crystalline form.

Fig. 4.14: Potassium permanganate solution is the most commonly used antiseptic.

The skin and mucous membranes of the muzzle, mouth, nose, hooves and feet serve as a fertile ground for hosting microorganisms. When the skin or mucous membranes are damaged or breached, antiseptics are used to disinfect the area and reduce chances of infections.

Potassium permanganate solution

The most commonly used antiseptic is potassium permanganate solution (Fig. 4.14). Potassium permanganate is a chemical compound that is available in crystalline form (Fig. 4.13). Potassium permanganate at (0.01 gram) mixed with water (1 litre)is used externally on the skin. The solution must be prepared just before use. Apart from being used for washing a wound or any external injury on the skin, it is also used to rinse the muzzle and nose of the infected animal externally. The solution may be used several times a day.

How to prepare: Boil one litre of water and cool it to lukewarm level, say 40–45 °C. Mix 0.1 gram of potassium permanganate powder in this water and stir it till it dissolves. The solution, thus, prepared is light pink in colour.

Precautions while preparing the solution: While preparing the solution, do not allow potassium permanganate crystals to come in contact with the skin and eyes as they may cause irritation and damage to the affected area.

- The solution must be handled carefully as it may leave a stain on the skin, nails and clothes of the person handling it.
- Before using the solution, ensure that all crystals are dissolved in the water.

Cleaning and washing the muzzle

Muzzle is the protruding part of the animal's head, which includes nostrils, mouth and jaws. The muzzle of a healthy animal is always moist and free from discharge. On touching, it feels cool. On the contrary, if the animal is sick, its muzzle is dry and warm. If the muzzle is dry, it indicates that the animal is suffering

from a disease. If there is continuous watery or thick discharge from the animal's nostrils, it is ill. A sick animal's nasal discharge may carry infectious agents, which may contaminate the feed and water, thereby, transmitting infections to healthy animals. This is especially the case in farms as there is common feed and water for all animals. Therefore, to reduce the spread of diseases, the ailing animals are separated, and their muzzle is washed thoroughly with an antiseptic solution. The muzzle is cleaned twice or thrice a day to maintain animal hygiene.

Cleaning and washing the hooves and feet

Hooves and feet disinfection is another important step in controlling the transmission of diseases. Infection causing agents are present in the discharge and secretion of animals, which may contaminate the floor of the shed and even the grazing field. These infection causing agents may stick to the hooves of the animals and get carried to the farm. Therefore, for effective disinfection of the hooves, a footbath is constructed at the entry gate of the farm. The footbath is a especially designed area about 9–15 feet in length, 3 feet wide and 6 inches deep. It is filled with a disinfectant solution. The animals have to pass through it everytime while entering or exiting the farm, which implies that they disinfect their hooves several times a day. Therefore, the location of the footbath must be such that the animals have to pass through it several times a day. A common solution used in the footbath is 5 per cent copper sulphate. As per a general rule, the footbath solution must be changed after the passage of 150–300 animals.

Non-infectious conditions and first aid

Some of the non-infectious conditions observed in dairy animals are indigestion and anorexia, constipation, tympany, impaction and diarrhoea. Early detection of these conditions may help carry out preliminary treatment easily. However, if there is no relief within few hours after giving preliminary treatment to a sick animal, then such conditions could be life threatening.

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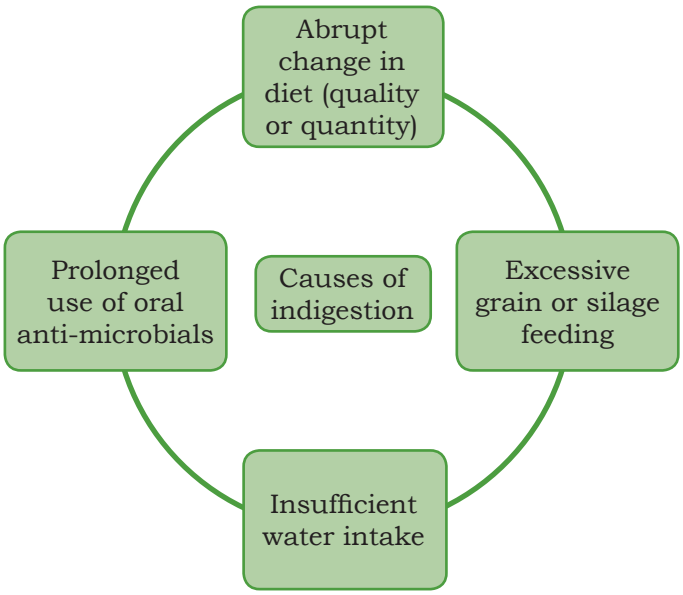

Fig. 4.15: Primary causes of indigestion in dairy animals

Indigestion and anorexia

Simple indigestion and anorexia are minor disturbances in the digestive function of farm animals. These are common in ruminants like goats and sheep. Simple indigestion is the failure of normal rumen movement, which means rumen mobility slows down but does not stop. Ruminants are animals with a four-compartment stomach, including the rumen (largest compartment), reticulum (honeycomb lining), omasum (many plies) and abomasum (gastric compartment). Microorganisms living in the rumen digest and utilise fibrous content present in the feed that they eat. The rumen functions in coordination with the reticulum to support contractions of the muscle that create functions of rumination (cud chewing and rumen contractions) and eructation (gas release). Simple indigestion in dairy animals occurs due to various reasons. The primary causes are depicted in Fig. 4.15. The most common sign of indigestion and anorexia is that the animal is off feed either partially or completely. The ruminal content becomes firm, so there may be mild bloating or swelling on the left flank.

Treatment

The treatment is aimed at correcting the suspected contaminated diet. Spontaneous recovery occurs when the animals are fed typical roughage. Making as adult animal drink about 20 litre of lukewarm water or administering saline orally may help restore normal rumen function.

Constipation

This is characterised when the animal cannot defecate or passes hard droppings with difficulty. Constipation is regarded as a sign of other diseases apart from being a disease itself.

Treatment

Constipation can be treated by giving enema to the affected animal. Enema is the administration of warm soapy water into the animal's rectum through anus. The animal must be given plenty of drinking water.

Tympany

This is characterised by abnormal distension of the rumen and reticulum caused by accumulation of gases in the rumen. The most common signs include distended left abdomen or dorsal abdomen left to the midline, pain and discomfort, animal refusing to graze, strain while urinating and defecating, and rapid or difficult breathing. The animal's mouth may be open with the tongue protruding out, and eventually, it may die, if tympany is not relieved.

Treatment

For the treatment of early or mild cases, an anti-bloat preparation available in market can be administered to the ailing animal orally. In moderately affected animals, a stomach tube can be inserted to release the rumen gas. In severe cases, a trocar and cannula are inserted into the rumen high on the left flank (where swelling is the maximum) to release the rumen gas. The insertion of a stomach tube or trocar and cannula requires special veterinary training. Vegetable oil (250–500 ml) or paraffin oil (100–200 ml) is traditionally used to relieve the animals.

Impaction

Rumen impaction is a condition characterised by dense packing of rumen with indigestible roughage. It is caused due to ingestion of a large amount of highly fermentable carbohydrate rich food or leftover or waste eatables of parties. The common signs start appearing within 6–12 hours of ingestion, and include restlessness, kicking in the belly, frequent lying down and getting up, and enlargement of the left side of the dorsal abdominal region. The affected animal is completely off feed and may eventually die.

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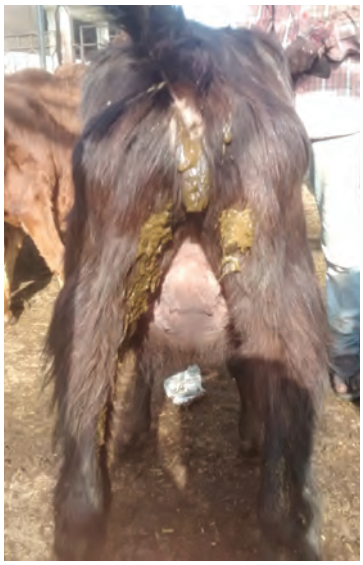

Fig. 4.16: Diarrhoea in a buffalo calf

Treatment

To treat impaction, the affected animal must have restricted access to grains. The animal must be made to exercise vigorously for half-an-hour thrice a day. About 200–400g of Sodium bicarbonate can be given orally with water to adult cows and buffaloes.

Diarrhoea

It is characterised by frequent passage of loose and watery faeces. The faeces may vary in consistency from animal to animal from being soft to liquid. In diarrhoea, excessive water is lost with faeces, causing dehydration in the affected animal (Fig. 4.16). The animal shows signs of dullness, depression, lethargy, weakness and sunken eyes. Diarrhoea can be caused due to infection or dietary reasons.

Treatment

In case of diarrhoea, the animal's diet must be corrected. If it is due to some infection, the animal must be given an appropriate medicine. The animal's digestive system must be given rest by withholding the feed partially or offering light and easily digestible feed to it for the first 24 hours. In case of dehydration, the animal must be made to drink plenty of water. To correct electrolyte loss due to diarrhoea, the animal can be given glucose along with electrolyte solution orally.

First aid for other diseases and conditions

Poisoning

It occurs when an animal consumes a toxic substance or venom of other animal. Poisoning causes deleterious effect on the animal and can even be life-threatening. Animals may swallow, inhale or absorb poison or toxic substances through the skin. Sometimes, it may even be injected into the animal. Medicine overdose can also be poisonous, and hence, dangerous. Usually, farm animals can get poisoned by eating plants that contain poisonous substances or accidentally ingesting urea, rodenticides, pesticides, etc.

Poisoning can cause minor irritation, mild abdominal pain, dullness, depression and refusal of feed. In severe

cases, the affected animal may suffer from sudden muscular trembling, convulsions, excessive frothing from the mouth and even death.

Different animals are allergic to different plants. The age of the animal is also important. Young animals are, generally, more susceptible to diseases and infections than older ones.

Treatment

In case poisoning, pay immediate attention to the affected animal. If the route of poisoning is through ingestion, then purgatives may be given to the animal. Under field conditions, the animal may be fed with 'crushed coal' as it is a universal antidote for poisoning. If the animal is suspected to be poisoned through the skin, it must be thoroughly washed with soap and water. Besides, veterinary advice is necessary.

Sunstroke

Also known as 'heatstroke', it is an emergency condition that occurs due to muscular exertion of the animal in high environmental temperatures and humidity. Sunstroke causes hyperthermia in the animal. 'Hyperthermia' is the elevation of body temperature above 104 °F. Sunstroke causes increased heart and respiration rate, restlessness, difficulty in breathing, and sometimes, even convulsions, eventually followed by the animal's death.

Treatment

In case of heatstroke, one must first aim at reducing the animal's body temperature. The animal must be immediately moved to a cool and ventilated area. Cold water must be poured on its body. Besides, adequate glucose and cold water must be given to the animal orally. Cold water enema may also be administered. Veterinary help is required for complete recovery of the animal.

Electrocution

It refers to accidental injury or death caused by electric shock or current passing through the animal's body. It is caused by lightning, high voltage electric current

from fallen transmission wires, accidental chewing of live electric cords, etc. The animal may come in contact with such wires near ponds and other areas.

The most common clinical sign of electrocution is varying degrees of electric shock. The sign depends on the voltage to which the animal is exposed to. In most cases of electrocution by lightning, the animal collapses and dies on the spot. In some instances, the animal may become unconscious but recover in few minutes to several hours. Other signs may include depression, blindness, etc., which may persist for few days or weeks.

Electrocution due to lightning can be detected on the basis of the history of lightning, injury mark on the carcass, damage to the surrounding environment like burning of an adjoining field or area.

Treatment

Treatment is, generally, carried out in animals, who are mildly affected, and on the basis of the clinical signs they show. The affected animal must be kept in an area with minimum disturbance. It must be made to drink plenty of water. Antibiotic cream or solution must be applied on the wound.

Burns

Burns or burn injury refers to a type of thermal injury caused by fire or a hot solid object. Injury caused by hot fluids or steam is called 'scalding'. The extent of a burn injury depends on the temperature of the hot object and duration for which the animal came in contact with it. Depending on the involvement of skin tissues, burns may be classified into three degrees — first, second and third.

Table 4.1: Classification of burn injuries

First degree	Second degree	Third degree
• Only superficial and outer layer of the skin is affected. • It is a mild injury and the animal recovers in few days.	• There is partial thickness of the skin. • Vesicles are formed. Care must be taken for speedy recovery of the animal and prevention of secondary infection.	• There full thickness of the skin. Underlying organs may also get affected. • It is the most severe form of burn injury. Extra care and attention is required to cure the affected animal.

The common clinical signs of burns include pain, thirst, anaemia and loss of necessary salts from the body. There is swelling, redness and blisters on the affected area. The recovery and survival of the animal depends on the body area affected rather than the degree of the burn.

Treatment

Dressing the burn with an antiseptic solution or cream must be done immediately after consulting the veterinarian. Efforts must be made to prevent the wound from getting contaminated. The affected area must be covered with a clean and sterile cloth. Sufficient drinking water and glucose solution must be given to the animal.

Wounds

A wound may be defined as an injury on the skin or other body tissue casued due to a cut, blow or other reasons. In farm animals, wounds often go unnoticed and are allowed to heal on their own without any dedicated care or treatment. Accurate and timely treatment of wounds decrease the blood flow. The method of treatment varies for different kinds of wound. Wounds may be of different types (Table 4.2).

Table 4.2: Types of wound and their characteristics

Wounds	Characteristics
Incised wound	If the tissues are severed by a sharp object and the edges of the wound are smooth, it is called 'incised' or 'clean-cut' wound. It is common in case of operative wounds.
Lacerated wound	When tissues get torn unevenly, such a wound is known as 'lacerated' wound, for example wound due to wire cut.
Contused wound	Such a wound is an injury caused by a blunt object. Such an injury may be superficial or deep. Superficial contused wounds may be an abrasion on to the skin or mucous surface. Deep contused wounds may be followed by loss of tissue or sloughing and are, generally, irregular with swollen margins. Such injuries are commonly caused by kicks.
Punctured wound	Such a wound is deeper than the width of the break in the skin or mucous membrane. It is caused by sharp objects, such as nails, splinters of wood, etc.

Fig. 4.17: Wound on the horn of a buffalo

How to control bleeding wound?

'Bleeding' or 'haemorrhage' is the most common symptom in haemorrhagic wounds. The degree of haemorrhage depends on the kind, number and size of the blood vessels severed. An animal with a bleeding wound is shown in Fig. 4.17. Death may also occur in case of severe bleeding.

Heat, ligation, pressure and torsion are some of the ways to treat a bleeding wound. Applying chilled water is effective in controlling bleeding from small blood vessels. Ligation and torsion of the cut end of large blood vessels must be practised. Applying hand pressure over the surface of the wound is the most convenient method of controlling bleeding in most cases. Whenever possible, the area must be bandaged with a clean cloth or bandage. Before putting on the bandage, the wound must be covered with a piece of sterile absorbent cotton that is dusted with boric acid. Bleeding from a wound that cannot be stopped by bandaging may temporarily be stopped by applying hand pressure or stuffing, padding it with absorbent cotton and holding it in place with sutures. The bandage must be left in place for 12–36 hours, depending on the extent of bleeding and type of the wound.

Management of wounds

The wounded area must be carefully examined for foreign objects or particles like hair, dirt, gravel, wood or glass pieces, nails, etc. Hair and torn tissues along the margins of a wound, which can interfere with the healing process, must be trimmed. Drainage must be provided for the secretion of pus. Suturing of the wound depends on its type and location. A wound must not be closed with sutures unless it is clean and shows no signs of sloughing. A severely infected wound must be left open unless a satisfactory drainage for pus and secretions is made. Wounds in muscles near movable joints must also not be sutured.

After treatment, the animal must be kept in a clean place. It must be stopped from biting, licking or nibbling

the wound. Dirt and rubbing against weeds and grass can irritate wounds in the foot region. So, the animal must be kept in a clean shed until the wound heals. Local treatment consists of keeping the wound clean by washing it daily and applying an antiseptic ointment, lotion or powder.

Prolapse of the uterus

It is a condition, wherein, the uterus comes out of the animal's vagina. It, normally, occurs immediately after calving or few hours after calving, or in some cases, the last stage of pregnancy. It is, usually, observed in old and malnourished animals. Animals with calcium deficiency are susceptible to prolapse of the uterus. Some breeds of cattle are, particularly, susceptible to uterine prolapse, in which mass uterus is found hanging through the vulva. In delayed cases, the mass may get ruptured or lacerated as the animal rubs it against the ground or walls of the shed.

Treatment

The dairy farmer or animal health worker must immediately wash the prolapsed mass of uterus with mild antiseptic solution. If there is swelling of the mass, it can be reduced by rubbing ice. Alternatively, saturated sugar solution may also be applied to reduce swelling of the mass. The animal health worker or dairy farmer must immediately wrap the prolapsed mass with a wet towel and try to keep it raised up to the level of the vulva. The prolapsed mass must not be allowed to dry. Injury to the prolapsed mass must be avoided and a veterinarian must be immediately called to treat the animal.

First aid kit for dairy animals

The first aid kit must be kept at an accessible place, which must be clean, cool and dry. Besides, it must be easy to carry. It is advisable to stick contact details of important persons like farm owner, veterinarian, etc., on the side of the kit, which can be accessible to others in case the animal caretaker is absent. Some of the items the first aid kit must contain are as follows.

NOTES

- Scissors
- Flashlight
- Halter and rope
- Needle-nosed pliers
- Wire cutters
- Disposable gloves
- 4×4" gauze sponges
- Skin cleansers
- Small bottles of sterile saline
- Water soluble ointment
- Anti-bloat medicine
- Trocar and cannula
- Rolls of medical tape
- Fly repellant
- Large syringes (10–50 ml)
- Cotton
- Antibiotic ointment for eyes
- Thermometer
- Antiseptic solution

Maintaining the first aid kit

- The first aid kit and the items present in it must be labeled neatly.
- It must placed at an accessible place.
- The items in the kit must be checked from time-to-time for replenishment and replacement in case of expiry.
- Clean the first aid equipment after every use.

Measures to be taken during first aid treatment

- Try to learn about the history of a case to rule out possible causes.
- Ensure adequate ventilation and fresh air in the treatment area.
- Check for bleeding immediately as severe blood loss can even cause the death of an animal.
- Provide enough warmth to the animal to prevent fluctuations in body temperature.
- Ensure that the animal's posture is comfortable.
- All open wounds must be dressed in order to prevent the spread of infection(s).

Practical Exercise

Activity

Demonstrate the steps to control transmission of infectious diseases in animals.

Material required: antiseptic solution, personal protective equipment, first aid kit and writing material

Procedure

- Visit a nearby farm.
- Maintain a hygienic environment in the farm.
- Isolate the infected animal.
- Clean the animal's body parts like muzzle, hooves, feet, etc., with an antiseptic solution.

Check Your Progress

A. Multiple Choice Questions

1. The main routes of disease transmission are _____.
   (a) aerosol (b) direct contact
   (c) oral (d) All of the above
2. Disease transmission can be prevented by _____.
   (a) avoiding overcrowding of animals
   (b) isolating all sick animals
   (c) cleaning and disinfection of the farm premises
   (d) All of the above
3. The passage of loose and watery faeces in increased frequency is known as _____.
   (a) diarrhoea (b) impaction
   (c) anorexia (d) injury
4. Abnormal distension of the rumen caused by accumulation of gases is known as _____.
   (a) tympany (b) impaction
   (c) indigestion (d) None of the above
5. The items for a livestock first aid kit include _____.
   (a) scissors (b) halter and rope
   (c) flashlight (d) All of the above

B. Fill in the Blanks

1. For disease control, isolation of _____ animals is required.
2. _____ is a condition, in which animals come in consume toxic substances.
3. Uterine prolapse is protrusion of the uterus through the _____.
4. A general rule is to change the footbath solution is after the passage of every _____ animals.
5. The most commonly used antiseptic is _____ solution.

NOTES

C. Mark 'True' or 'False'

1. Flies, ticks and mosquitoes are common vectors.
2. The muzzle of a healthy animal is moist and cool.
3. Constipation occurs when an animal can easily defecate.
4. Enema is the administration of a medicine or warm soapy water through the anus.
5. Simple indigestion is a minor disturbance in the digestive function.

D. Match the Columns

A	B
1. Rumen	(a) Toxic substance
2. Constipation	(b) Heatstroke
3. Poisoning	(c) Largest compartment of the stomach
4. Sunstroke	(d) Electric shock
5. Electrocution	(e) Animal cannot defecate

E. Crossword

	[1]P	R		L		[2]P		E
						O		
						I		
			[3]B	U		N		
[4]T		M	P		N			
			[5]W	O		N		
						G		

Across

1. A condition in which the uterus comes out of the vagina.
3. It is a type of thermal injury caused by fire flames and hot solids.
4. It is an abnormal distension of the rumen and reticulum caused by accumulation of gases in the rumen.
5. An injury to the skin or other body tissue(s) caused due to a cut, blow or other impact.

Down

2. It is a condition in which animals are poisoned by toxic substances.