

Unit



Implementation of Preventive Animal Health Care



17903CH02

INTRODUCTION

You will agree that your potential for studies and academic achievements increase if you do not fall ill throughout the year. Same is the case with farm animals. Output of animals increases if they are kept healthy. Preventive animal health care consists of measures taken for disease prevention rather than disease treatment.

Regular preventive animal health care programmes promote animal health by preventing and reducing animal diseases, thereby reducing the cost of treatment. Early diagnosis and treatment slows the incidence and extent of common diseases in animals. Implementation of preventive animal health care programmes checks animal health related threats and minimises negative impacts on the environment. In this Unit, the timely identification of occurrence of diseases on the basis of common clinical signs and the disease reporting system helpful in controlling animal diseases, are discussed.

SESSION 1: OCCURRENCE AND REPORTING OF ENDEMIC DISEASES

A large number of diseases occur frequently in farm animals and cause tremendous economic losses to the farmers. Economic losses caused due to diseases can

be either direct or indirect. Direct losses are due to the cost of treatment of diseased animals, death of diseased animals, reduced production in terms of milk, meat, wool and skin, etc. Indirect losses are due to abortions, infertility and sterility caused due to these diseases.

Occurrence and reporting of endemic diseases

Timely identification of occurrence of diseases and their reporting is necessary for keeping them in control. In the absence of timely reporting of diseases, the diseases may assume serious proportions before control and preventive steps can be initiated. The strategy for overcoming such a situation is rooted in promotion of farm animals' health and welfare through disease prevention rather than cure.

The occurrence of the animal diseases can be detected on the basis of clinical symptoms in farm animals. When such symptoms are detected, the government veterinary doctor is informed at the earliest. This information is passed on to the block level and then to the district and the state veterinary authorities for action on their part.

Fig. 2.1 shows the structure for step-wise reporting of the occurrence of diseases in our country.

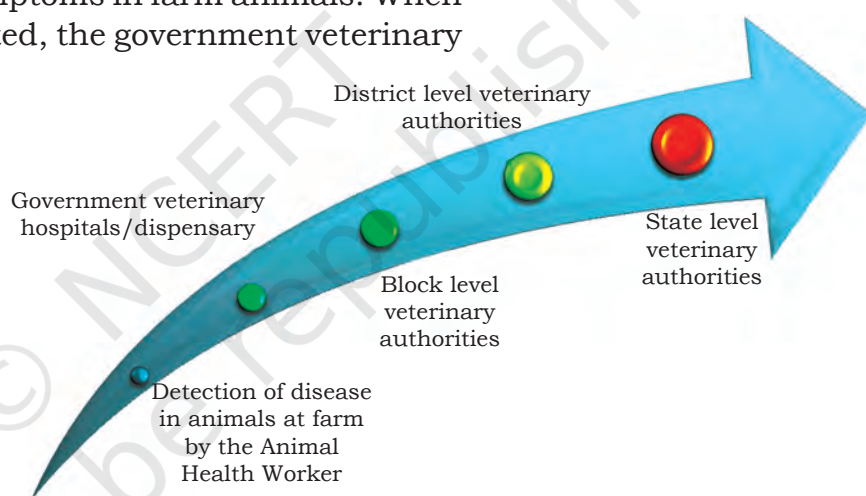


Fig. 2.1: Structure for reporting animal diseases

Common diseases of farm animals

An animal health worker is expected to have a general idea of important diseases prevalent in farm animals which keep on recurring periodically. Some of the common diseases of farm animals and their distinct symptoms are given below.

Foot and Mouth Disease (FMD)

It is characterised by high fever, formation of vesicles and blisters in the mouth, udder, teats and skin between the toes and above the hooves. There is

excessive salivation and the animal becomes lame. FMD is highly communicable and spreads by direct contact or indirectly through infected water, manure, hay and pastures. Although the disease is not life-threatening in case of adult animals, it could lead to death in a few cases in calves. It can be prevented easily by regular vaccination of the animals.

Mastitis

It is a common disease of cattle and causes substantial direct and indirect losses to the dairy farmer. It is a bacterial disease and can only be prevented by early detection and good farm management practices

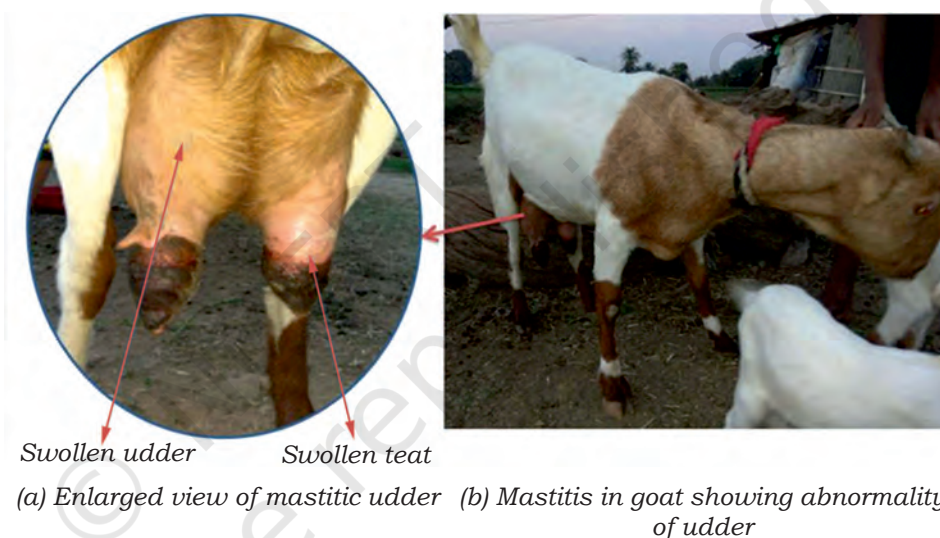


Fig. 2.2: Mastitis in goat

including hygiene. The most common symptoms are abnormalities in the udder, i.e., swelling, heat, hardness, redness or pain in the udder (Fig. 2.2). The milk of animal appears watery and sometimes flakes, clots or pus are also seen in the milk. Other symptoms are reduction in milk yield, increase in body temperature and lack of appetite.

Anthrax

It is a highly infectious and fatal disease of cattle and leads to the sudden death of the animal within two or three hours of infection. Very rarely do animals show high temperature, difficulty in breathing and

convulsions before death. Small amount of bloody discharge from the nose, mouth and other openings is visible after the death of the animal.

Black quarter (BQ)

It is a highly infectious and fatal disease of cattle, buffaloes, sheep and goats. Mostly young cattle between 6–24 months of age and having good body condition are affected. Most important clinical signs of this disease are high fever, loss of appetite, dullness, crepitating swelling over hip, back and shoulders.

Haemorrhagic septicaemia (HS)

In this disease, there is infection in the upper respiratory tract of the animal. High fever, watery discharge from the nostril and animal going off feed, are some of the symptoms of this disease. There is swelling under the neck and affected animals feel respiratory distress.

Brucellosis

It is a disease of adult animals. It causes abortions in pregnant animals thus leading to economic loss to the dairy farmer. In bulls, it causes swelling of the testicles. This disease has zoonotic implications as well.

Timely reporting of the diseases

Keeping a track of the information received regularly about the occurrence of diseases from various sources, helps in developing a disease alert system. This disease alert system is helpful in informing the farmers and animal owners about the possible outbreak of diseases. In this way, timely preventive strategies can be formulated to check the spread of the suspected diseases. The overall benefits of timely reporting of the diseases are given below:

- (i) The animal owners can follow better management of diseases for their animals.
- (ii) Early reporting of diseases helps in the timely availability of veterinary services for preventive strategies like vaccination of the susceptible animals.

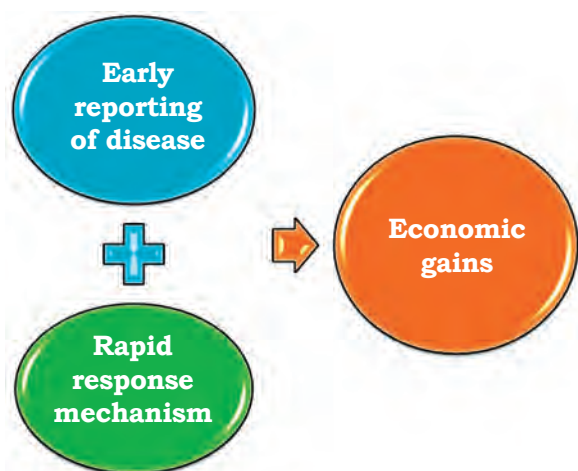


Fig. 2.3: Benefits of timely reporting of the diseases

- (iii) It helps in maintaining the productivity of animals.
- (iv) It helps in saving the costs that would have been incurred in the treatment of animals.

The effective monitoring of the occurrence of farm animal diseases helps in controlling them. The overall impact of such measures results in better animal health and economic gains to the farmers in the country. Fig. 2.3 summarises this concept.

Practical Exercises

Visit a nearby livestock farm.

1. Note down the record of occurrence of diseases during the previous one year.
2. Visit a nearby government veterinary hospital and note down the disease reporting system being used there.

Check Your Progress

A. Multiple choice questions

1. Which of the following is a symptom of FMD?
 - (a) High fever
 - (b) Vesicles and blisters in the mouth
 - (c) Excessive salivation
 - (d) All of the above
2. In male animals, Brucellosis disease causes
 - (a) abortion
 - (b) swelling of testicles
 - (c) Both (a) and (b)
 - (d) None of the above
3. In Black quarter disease, there is crepitating swelling over
 - (a) hip
 - (b) back
 - (c) shoulder
 - (d) All of the above
4. In Mastitis disease, the udder becomes
 - (a) swollen
 - (b) hard
 - (c) painful
 - (d) All of the above

5. Indirect losses in animal husbandry are due to

- (a) abortion
- (b) infertility
- (c) sterility
- (d) All of the above

B. Fill in the blanks

1. Brucellosis causes _____ in pregnant animals.
2. Mastitis is the most common and expensive disease of _____ animals.
3. The _____ working in a government system is informed first at the time of occurrence of a disease.
4. In Mastitis, the milk appears _____.
5. FMD is highly _____ disease of farm animals.

C. Mark True or False

1. In Anthrax, small amount of bloody discharge from the nose, mouth and other openings is found after the death of an animal.
2. Timely reporting of the diseases does not help in better management of diseases.
3. Brucellosis has zoonotic implications.
4. In Hemorrhagic Septicaemia, infection is in the upper respiratory tract.
5. FMD is not a communicable disease.

SESSION 2: VACCINATION IN FARM ANIMALS

What is a vaccine?

A vaccine is a fluid that helps the animal's body to become immune to a disease which is caused by certain germs or micro-organisms. The vaccine contains some part of the germ or the poison that the germ produces. The vaccine does not make the animal sick. It rather helps the animal's body to protect itself from getting diseased in future. Vaccination is usually done in cattle, buffaloes, sheep, goats and swine.

Vaccination means the administration of a particular vaccine into the animal's body to make it immune

to a specific disease. The different vaccines may be administered either subcutaneously, intradermal or intramuscularly based on the standard instructions prescribed for that particular vaccine.

In animal rearing, a vaccine produces resistance in the entire herd thereby minimising the economic losses due to treatment of infectious diseases. As a thumb rule, vaccines are administered only to the healthy animals.

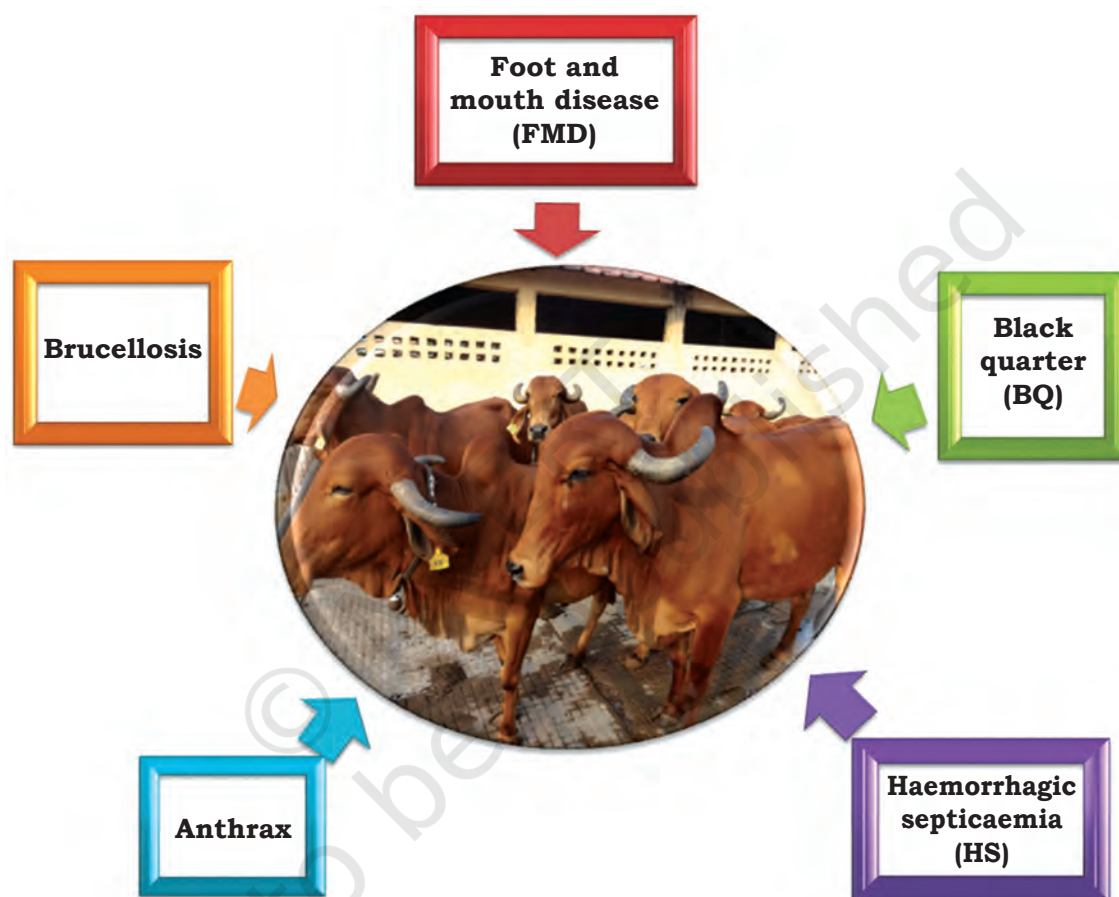


Fig. 2.4: Major diseases in cattle requiring vaccination

Vaccination schedule for farm animals

A full vaccination schedule includes primary vaccination, booster vaccination and revaccination.

Primary vaccination

It is the first dose of vaccine administered to the animal for developing an initial immune response towards a specific disease.

Booster vaccination

In most cases, the immunity of a farm animal against a disease reduces with time. To maintain the optimum level of immunity in the body of the animal, another dose of the same vaccine is administered and it is called the booster vaccination. In other words, the booster vaccination means extra administration of the same vaccine used in primary vaccination in that farm animal.

Revaccination

Most of the vaccines once administered do not give lifelong protection to the animal. There is a certain period of time for which the vaccine protects the animal. This period of time is generally one year. Therefore, vaccination is repeated on a particular date every year. This is called revaccination. Revaccination is important to protect the animal from diseases throughout its life.

The sequence of vaccination schedule in animals is depicted in Fig. 2.5. The recommended vaccination schedule for diseases common in cattle and buffalo is given in Table 2.1.

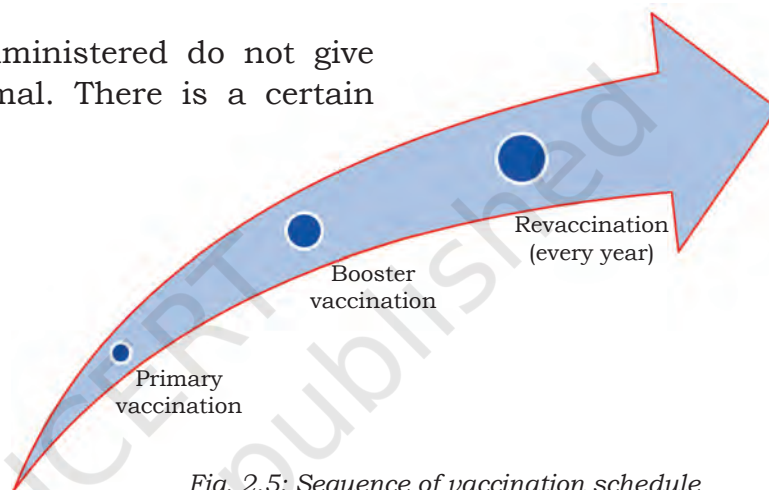


Fig. 2.5: Sequence of vaccination schedule

Table 2.1

Vaccine	Primary vaccination	Booster vaccination	Revaccination
FMD vaccine	6–8 weeks of age	6 months after 1st dose	Annually
HS vaccine	6 months and above	–	Annually
BQ vaccine	6 months and above	–	Annually
Anthrax vaccine	6 months and above	–	Annually in endemic areas
Brucella vaccine (for Brucellosis)	4–8 months female calf, i.e., young heifers	–	–

Pre- and Post-vaccination care of farm animals

Pre-vaccination care

Ideally, all the farm animals are vaccinated, but this is difficult to achieve under field conditions. These conditions are stress in animals, adverse weather conditions, nutritional imbalances, sickness, parasitism, etc. (Fig. 2.6).

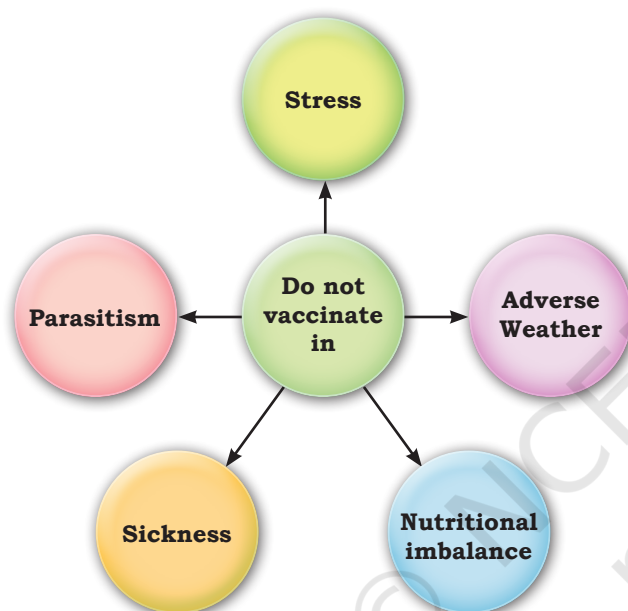


Fig. 2.6: Non-ideal conditions for vaccination

Vaccination as a rule of thumb is administered only to healthy animals. Some animals may develop adverse side-effects ranging from fever to fits upon vaccination. Some animals may even experience shock and sudden death. Vaccines administered to an unhealthy animal may fail to provide the required immunity. The farmer may assume that immunisation for the animal has been achieved but in reality the vaccine never proved effective in the first place due to the unhealthy state of the animal. Moreover, the animal's immune system, which must be primarily fighting illness caused due to so many other factors, is diverted to handle the vaccine.

Ideal conditions of animals for vaccination

- (i) *Age of the animal*: The minimum age for vaccination in farm animals is approximately 3–4 months. However, in some cases it also depends upon the type of vaccine used.
- (ii) *Pregnancy*: As a general rule, farm animals are never vaccinated during pregnancy.
- (iii) *Sick animals*: In general, injured animals and those with minor problems like watery nasal discharge, etc., can be vaccinated. However, vaccine is not administered in case of debilitated and severely ill animals. Proper response to the vaccine is generally not seen in animals with high body temperature

which could be due to fever or high environmental temperature. Therefore, the body temperature of the animal is lowered to normal level before vaccination.

- (iv) *Worm load in the animal*: High incidence of worm infection or tick infestation causes physiological stress to the animal. This stress may interfere with the desired response towards the vaccine in terms of development of immunity towards that particular disease. Therefore, all animals must be dewormed before vaccination.

Apart from the physiological status of the animal, other conditions that are kept in mind and followed strictly before vaccination are the precautions mentioned for the vaccines.

Post-vaccination care

Modern vaccines are extremely effective and safe. However, it is common for some animals to experience mild side-effects following the vaccination and therefore the farmers need not be alarmed on noticing such side-effects. Some of the common mild side-effects seen after vaccination are shown in Fig. 2.7. However, if any of these signs lasts for more than 24 hours, then the animal requires special veterinary attention.

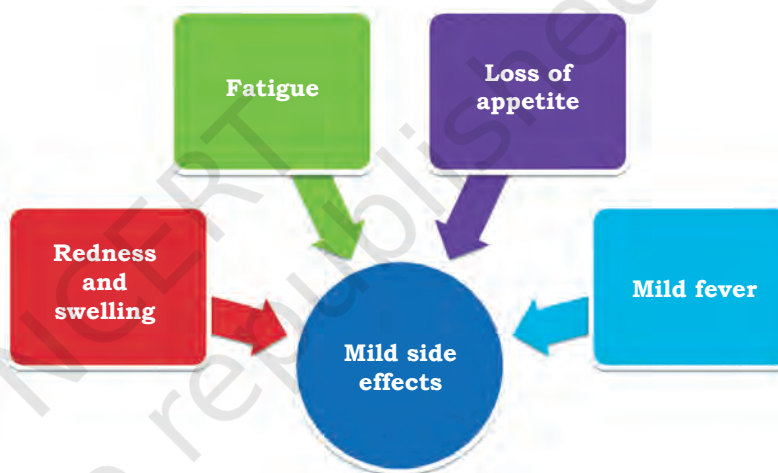


Fig. 2.7: Mild side effects of vaccination

Handling of vaccines

Most of the vaccines used in farm animals are developed from live infectious organisms. Vaccines are very sensitive to temperature variations. Proper handling and administration of vaccines is very important for their effectiveness. The following important points must be kept into consideration while handling the vaccines.

- (i) Immediately upon receiving the vaccine through transport, the seal for intactness of the vaccine is checked. It is ensured that the vaccine has been transported in ice packs. If the vaccine does

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not pass these criteria, it needs to be replaced immediately. Close attention is paid to the expiry date printed on the vaccine. In case it is already expired, then it will not be effective and could make the animal susceptible to the disease against which the vaccine was to be administered.

- (ii) Once the vaccines are unloaded, they are stored at 35°F–45°F (2°–7°C). Temperatures higher or lower than this range can result in the death of the living organisms present in the vaccine and make it ineffective. Therefore, monitoring the temperature is essential in warmer environments. Moreover, the vaccines are never frozen.
- (iii) Most of the vaccines are available in multi-dose vials. A greater risk of environmental contamination of the vaccine exists if the stopper of the vial is repeatedly pricked with different needles to draw out vaccine for different animals. To avoid this, a single needle is permanently inserted into the stopper of the vial and the vaccine is drawn out with a fresh syringe used for every animal. This practice maintains the sterility of the vaccine.
- (iv) Since most of the vaccines are freeze-dried, therefore they need to be mixed with a sterile diluent prior to their use for vaccination. These diluents are product-specific and therefore they must not be changed or substituted with another product or solution. The vaccine is reconstituted by mixing and thoroughly dissolving the diluent with the vaccine under sterile conditions. Once a vaccine has been reconstituted it is administered within 60 minutes and protected from temperature extremes by maintaining its temperature.

Administration of vaccines

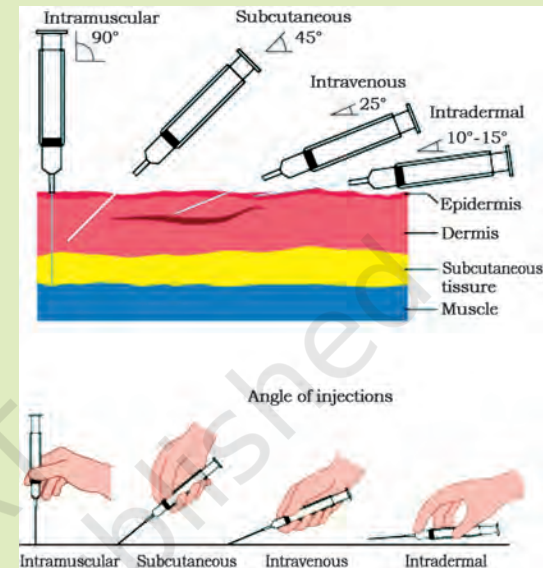
- (i) As mentioned earlier, the vaccines are administered through the subcutaneous route, intradermal route or the intramuscular route. Standard instructions for the route of administration of a particular vaccine are prescribed by the manufacturer. Prior to vaccination, the route of administration, as indicated by the manufacturer, is followed properly.

If the instructions are not followed properly it could result in inactivation of the vaccine and diseases in animals including severe organ damage and even death.

- (ii) Cleaning the skin of the animal with an alcohol swab prior to vaccination is a bad practice. Alcohol can inactivate the micro-organisms present in the vaccine.
- (iii) Most of the vaccines used in farm are infectious or “live” biological products so care must be taken to clean spillages of the vaccine. If the vaccine has spilled on the body of the animal or onto the table or floor then it must be cleaned with a disinfectant. If the vaccine has spilled onto the animal health worker, then it should be removed by thorough washing with soap and water. If the spillage of vaccine is not attended properly then it could cause illness in animals and could lead to the spread of infectious diseases in the farm.
- (iv) If the animal shows any local or systemic reaction after vaccination, it needs to be properly documented for the subsequent booster vaccinations. If the animal has a history of reaction to the vaccine, then

Different routes of administering injections

Needle insertion angles of four different types of administration of medication, i.e., intramuscular, subcutaneous, intravenous and intradermal injection.



Courtesy: <https://goo.gl/p9khzC>



Fig. 2.8: Vaccination through intramuscular route in cattle



Fig. 2.9: Vaccination through subcutaneous route in cattle

the subsequent vaccination is undertaken only under veterinary guidance. A change in the vaccine and/or pre-medication with anti-inflammatory drugs is recommended in such circumstances.

- (v) Proper documentation of the vaccination programme is important for many reasons, e.g., it is a legal proof of vaccination status whenever there is an outbreak of disease in that area. It also helps in monitoring adverse reactions in the animals after vaccination.

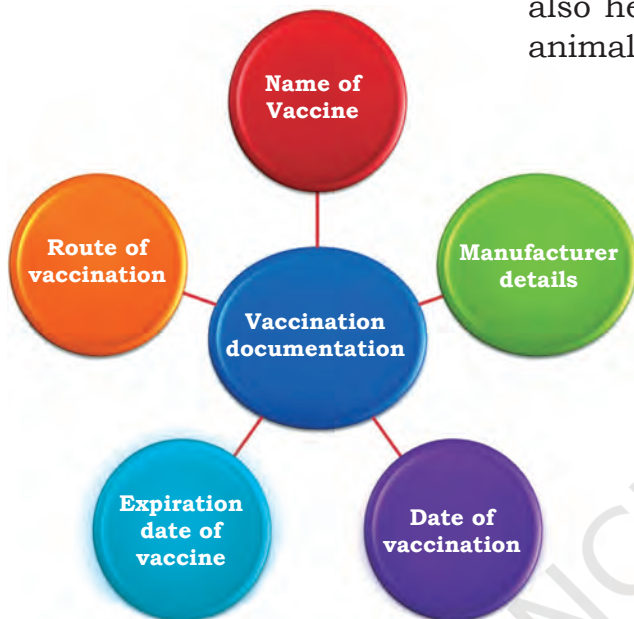


Fig. 2.10: Important components of vaccination documentation

Components of vaccination documentation

The following information is recorded in the vaccination record of each animal:

- Name of the vaccine administered.
- Manufacturer's details, lot or serial number, expiration date of the vaccine.
- Date of administration of the vaccine.
- Route of administration of the vaccine.

The manufacturer's label is removed from the vaccine bottle and pasted on the record register (Fig. 2.11). It is much more easier to maintain such records on a computer.

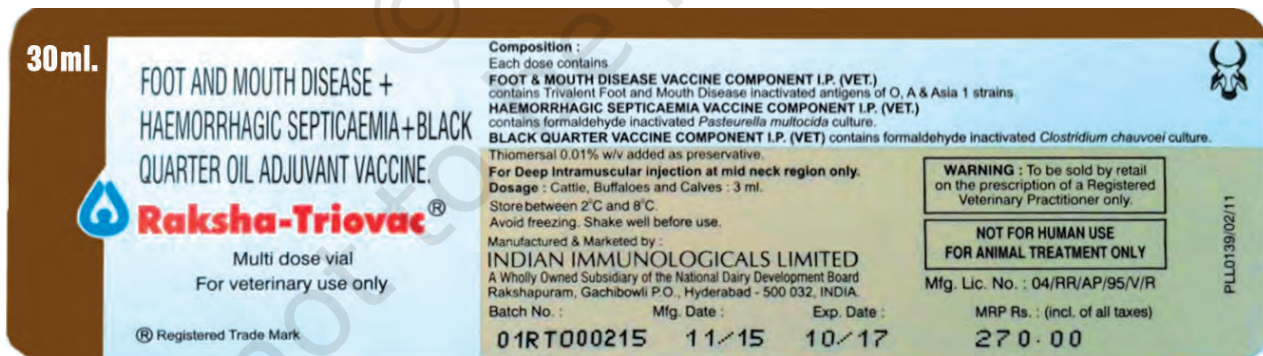


Fig. 2.11: A vaccine label showing (a) name of the vaccine, (b) route of vaccination, (c) vaccination dosage, (d) optimum temperature for storage of vaccine, (e) batch number, (f) manufacturer's details, etc.

Disposal of vaccines

Vaccination is the most cost-effective way to ensure good health and welfare of the animals. Therefore, it is important to utilise them properly and with care.

It must be borne in mind that a vaccine is a kind of biological fluid that contains germs of diseases. Therefore, proper disposal of unused vaccine is as important as its proper administration. If the unused vaccine is not disposed properly, it might cause infection or disease in animals and human beings. The following points must be kept in mind for proper disposal of vaccines:

- (i) Unused vaccines and their containers are incinerated or sterilised by autoclaving or other approved procedures.
- (ii) Vaccines are never disposed into sewers or other water sources. However, empty vials can be disposed directly with other waste.

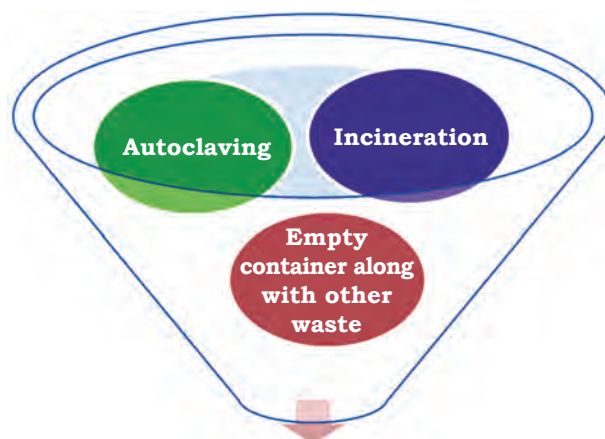


Fig. 2.12: Disposal of unused vaccine and containers

Practical Exercises

Visit a nearby livestock farm.

1. Note down the vaccination schedule followed at the farm in the preceding quarter.
2. Talk to the animal handler of the farm about handling of vaccines and method of vaccination and prepare a report on it.

Check Your Progress

A. Multiple choice questions

1. Most common mild side-effects seen after vaccination include:
 - (a) Redness, mild swelling and tenderness at the vaccination site
 - (b) Decreased activity levels (fatigue)
 - (c) Loss of appetite
 - (d) All of the above
2. Vaccines can be administered through
 - (a) subcutaneous route
 - (b) intradermal route
 - (c) intramuscular route
 - (d) All of the above

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3. Do not vaccinate the animal during
 - (a) adverse weather conditions
 - (b) nutritional imbalances
 - (c) pregnancy
 - (d) All of the above
4. FMD vaccination cannot be done at the age of
 - (a) 6–8 months
 - (b) 1 year
 - (c) 2 years
 - (d) Below 3 months
5. Revaccination is required in
 - (a) FMD
 - (b) HS
 - (c) BQ
 - (d) All of the above

B. Fill in the blanks

1. _____ is required to control diseases in animals.
2. Once a vaccine has been reconstituted it is administered within _____.
3. Vaccines are stored at the temperature of _____ °C.
4. _____ vaccine is administered only to female calves.
5. All animals must be _____ before vaccination.

C. Mark True or False

1. Vaccines are not administered on weak animals.
2. Date and route of administration of vaccine must be documented.
3. Vaccine does not require proper disposal.
4. Mildly sick animals can be vaccinated.
5. Vaccination reduces the average age of the animal.

SESSION 3: DEWORMING AND CONTROL OF ECTOPARASITES

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What are worms?

Internal parasites or worms are one of the greatest hazards in animal husbandry. Worms are internal parasites that live and prosper in the body of the farm animals. Worms grow at the cost of health of the farm animal, which acts as a host to the worms. Understanding the lifecycle of worms is important for a successful programme of controlling the worm load in farm animals.

Worms lead to significant losses in farm animals' productivity by causing various sub-clinical and clinical effects. Sub-clinical effects in farm animals include reduced milk production, weight loss and reduced conception rate. Clinical effects include roughness of skin, anaemia, diarrhoea, etc. Besides affecting the health of the animal, internal parasites also cause significant costs incurred on their treatment. The principal internal parasites of farm animals are roundworms, tapeworms, flukes and protozoa.

How do animals get parasitic infection?

Excretion of the parasites through faeces of the infected animals contaminates almost all the grazing fields. Due to their grazing behaviour, farm animals are more prone to worm infections. While grazing on such contaminated fields, the animals ingest these harmful parasites or worms. Worms live inside the body of the animals and rob them for food and blood. Thus, the need to control internal parasites will exist as long as farm animals graze the pastures.

Aim of deworming

Eliminating or lowering the level of parasites in the farm animals is an important part of animal husbandry. This can be achieved by deworming the animals. Therefore, deworming is the practice of giving medicines to the animals to help them get rid of internal parasites or worms. These medicines can be given either orally or through injections.

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It is very difficult to completely eradicate the worms from the animal farm ecosystem. Therefore, the aim of deworming the farm animals is to prevent the worms from reaching high levels of infection inside the animal body. Dewormers are used to control worm infections.

Choice and selection of dewormers

Worms develop resistance against repeated use of particular dewormers. To tackle this problem of resistance, it is advisable to use dewormers selectively and wisely. It is recommended that the same dewormer is not repeated every time, rather alternative dewormers should be used. There are a number of dewormers available but the selection of dewormer depends on various factors like age of the animal, weight of the animal and activity of dewormer against different parasites.

Young animals are more susceptible to internal parasites than adult animals. Although adult animals are less susceptible to most parasites, those reared under poor living conditions become susceptible. An ideal dewormer has the following properties:

- (i) Broad spectrum activity of the dewormer against both adult and larval stages of parasites.
- (ii) The dewormer does not have any unpleasant side-effects on the animal. Some drugs may cause vomiting, pain or irritation to the skin at the injection site.
- (iii) The dewormer is suitable from practical and economical points of view. An ideal dewormer is stable and does not decompose on exposure to normal ranges of temperature, light and humidity and has a longer shelf-life. The ideal dewormer is reasonably priced and user-friendly.

Administration of dewormers

A wide variety of formulations and preparations of dewormers is available for administration through oral route or injectable route.

Oral route

The majority of dewormers are given as liquid preparations, boluses and tablets orally. Liquid preparations are usually available as ready-to-use products. Several

devices like syringes, bottles and drenching guns can be used for administration of medicine through mouth. Boluses and tablets containing the dewormer can be placed deep into the mouth of the animal or they can be crushed into powder form, dissolved in water and then given orally using a syringe.

Sometimes, dewormers can be mixed with the feed but in such cases, the intake of dewormer might not be accurate because animals may not consume the whole amount of feed. Therefore, administration through feed is the least preferred method of deworming.

Injectable route

A number of dewormers are available as injectable preparations. The prescribed route of injection for a particular dewormer needs to be followed strictly.

Deworming schedule

- (i) The deworming drugs and their dosage are decided under the guidance of a veterinarian.
- (ii) Both overdose and underdose of deworming drugs is avoided to control the side-effects and/or development of resistance against that particular drug.
- (iii) Deworming is started in the first week of birth of the animal.
- (iv) Deworming is done every month for the first six months after birth and thereafter once in three months. Adult cattle can be dewormed once in a year.

Control of ectoparasites

Ectoparasites are organisms which live on the skin of other animals. Ectoparasites are of different types like mites, lice, ticks and flies. They cause detrimental effects on the skin and the overall health of the animals on which they live. Ectoparasites are responsible for direct as well as indirect losses to the farm owner.

Direct losses result due to discomfort and damage caused by the parasites to the animals on which they thrive. Discomfort due to ectoparasites causes reduction in milk production and retarded growth in the suffering

animal. In some animals, ectoparasites cause damage to the skin and wool due to rubbing and scratching caused because of itching.

Many diseases are transmitted from infected animals to other healthy animals through ectoparasites. These act as carriers for transmission of other diseases in animals. Major ectoparasites of farm animals are listed below:

- (i) *Mites and lice*: Parasitic mites and lice live on hair and outer layer of the skin. Both lice and mites permanently thrive on the animal body and feed on skin tissues and blood of the animal.
- (ii) *Ticks*: They live on the body of animal for a short period of time. They feed on the animal's blood and their bites cause irritation, swelling, redness and itching to the animal (Fig. 2.13). Ticks are also responsible for transmission of a number of diseases.



(a)



(b)

Fig. 2.13: Buffalo having heavy tick infestation (a), close view of ticks (b)

- (iii) *Flies*: They feed on blood, sweat, skin secretions, tears, saliva, urine and faeces of animals. They directly puncture the skin or infest on wounds of the animal. Flies can transmit many diseases from infected animals to healthy animals. They also cause irritation and disturbance to the animal, which results in reduced weight gain and milk yield.

Heavy infestation of ectoparasites means poor health of farm animals. Several medicines for external application on the body of the affected animals are available for controlling the ectoparasites.

Points to be remembered for controlling ectoparasites

- (i) An ectoparasiticide is an antiparasitic drug used for the treatment of ectoparasitic infestations. These drugs are used to kill the parasites that live on the body surface of the farm animals. Immediately upon arrival of new animals on a farm, they must be treated with ectoparasiticides to avoid spread of new parasites to other animals of the farm.
- (ii) If external parasites are seen on the body of the animal, treat them immediately to prevent their spread to other animals.
- (iii) A single dose of ectoparasiticide treatment may not be sufficient for the control of ectoparasites. The first treatment will only kill the active stages of the parasite present on the animal at the time of treatment. A second treatment after 15–21 days is required to kill any eggs that might have hatched since the first treatment.
- (iv) Besides treating the affected animals, it is necessary to thoroughly clean and disinfect animal houses, paddocks or barns with suitable chemicals to destroy the parasites and their eggs on the floor, walls and corners of the animal houses.

Methods of controlling ectoparasites

Ectoparasiticides can be applied to animals through several methods. Fig. 2.14 shows the most common methods used for this purpose.

Dipping

It can be done in small-sized animals. This is very effective if large number of animals are to be treated. The animal is lifted and dipped into a tank filled with the ectoparasiticide solution ensuring that the head region of the animal is not dipped into the solution. Dipping is done in early morning, so that animals are not immediately exposed to the hot sun. Dipping is not recommended if heavy rain is expected, as the medicine may be washed off.

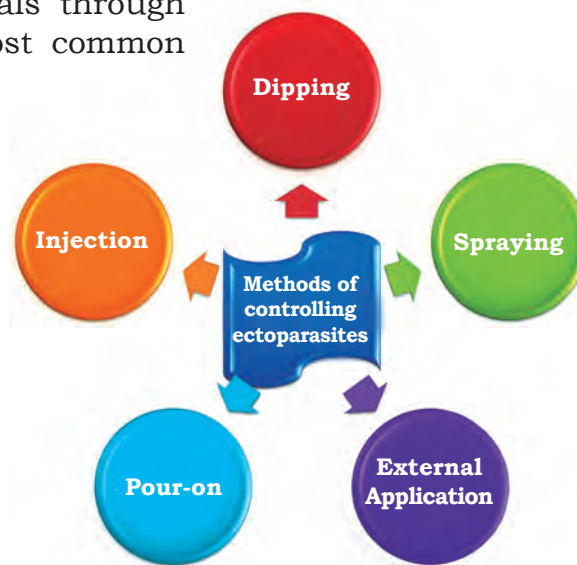


Fig. 2.14: Methods of ectoparasite control

Hand spraying/external application

Hand spraying is the most commonly used method of applying ectoparasiticides. It is effective especially if a small number of animals are to be treated. If a sprayer is not available, then the parasiticide can be applied with a paint brush or a cloth. The animal is tied securely before external application of the medicine. The sequence of application of medicine starts from the head and ends at the tail covering all areas of the body. During the application of the medicine, the eyes, nostrils and mouth are not exposed to the medicine.



Fig. 2.15: Ectoparasiticide being poured on the backline of cattle

Pour-on medicines

This is a very effective method of controlling ectoparasites. A small volume of a special medicine, available as pour-on preparation, is poured along the backline of an animal. It disperses over the body surface of the animals and kills the infesting ectoparasites. Backline of the animal on which pour-on medicine is applied is shown in Fig. 2.15.

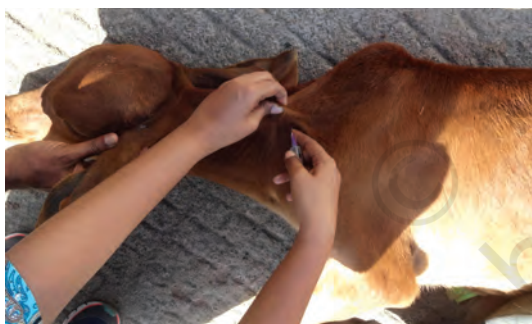


Fig. 2.16: Subcutaneous injection of ectoparasiticide being given to a calf

Injections

Some ectoparasiticides can be injected into the animal through subcutaneous route. These ectoparasiticides act against both internal and external parasites. These compounds are generally more expensive than the other medicines. An example of subcutaneous injection of ectoparasiticide being given to the animal is shown in Fig. 2.16.

Methods of controlling ectoparasites in animal houses

Ectoparasite control can be fully achieved only by an integrated approach in which measures are taken on the whole farm. Management of ectoparasites in animals and animal houses is the key to reduce their infestation. It is impossible to eradicate all ectoparasites on the farm, therefore control practices are directed towards

reducing the population of ectoparasites to tolerable levels. Good farm management is helpful in reducing the level of ectoparasites.

Good management includes general farm hygiene, maintaining health of animals, trimming the grass around animal sheds, reducing moisture in and around buildings by covering the drains, controlling water run-off and maintaining proper sewage systems. Regular removal of moist bedding, hay and manure along with controlling growth of weeds and grasses is very helpful in lowering the levels of ectoparasites.

Despite good management practices, some ectoparasites and their eggs still survive on the ground. These ectoparasites can live on the ground for many days without feeding. Therefore insecticides are sprayed on the buildings, paddocks, barns, etc., after every two weeks.

General precautions for using ectoparasiticides

- (i) Always use recommended dosage of ectoparasiticides. Using too high concentrations will not kill more parasites but may harm the animal instead.
- (ii) Application of the ectoparasiticide on the animal body is not carried out in a confined and non-ventilated area.
- (iii) The animals are provided sufficient feed and water before dipping them in the medicine solution because thirsty or hungry animals can drink the medicinal solution used for dipping, which can prove harmful to them.
- (iv) Ectoparasiticides are kept well secured so that feed or drinking water is not contaminated.
- (v) Ectoparasiticides are not applied to sick animals or animals under stress because the medicine may deteriorate their condition further.
- (vi) Animal health workers handling and applying medicine to the animals must wear gloves, protective clothing, goggles and mask to avoid the medicine splashing into the eyes or coming in contact with the skin. If there is any contact, wash immediately with soap and water.

NOTES

- (vii) It is important to ensure that the unused medicines do not damage the environment. The unused medicines are never poured into rivers or ponds. These can be drained into pits at least 150 meters away from water sources.
- (viii) It is recommended that the sprayers are cleaned immediately after use.
- (ix) It is extremely dangerous to reuse empty containers of ectoparasiticides. The containers are crushed and buried in an isolated area at least 50 cms below the ground surface.

Practical Exercises

Visit a nearby livestock farm.

1. Look for the ectoparasites on the animal body and draw their pictures.
2. Talk to the animal health workers about deworming and control of ectoparasites in the farm. Prepare a report on the same.

Check Your Progress

A. Multiple choice questions

1. Which of the following method can be used for controlling ectoparasites?
 - (a) Dipping
 - (b) Hand spraying
 - (c) Injection
 - (d) All of the above
2. Insecticides are sprayed on the buildings/paddocks, barns every
 - (a) two weeks
 - (b) two months
 - (c) three months
 - (d) None of the above
3. Dipping is done in
 - (a) afternoon
 - (b) early morning
 - (c) evening
 - (d) Anytime

4. For effective control of ectoparasites, usually second treatment is required after _____ of first treatment.
 - (a) 7–9 days
 - (b) 15–21 days
 - (c) 1–2 months
 - (d) 3–4 months
5. Persons involved in handling and applying the ectoparasiticide medicine to the animals wear
 - (a) only gloves
 - (b) only goggles
 - (c) only mask and goggles
 - (d) gloves, goggles and mask

B. Fill in the blanks

1. _____ are the organisms which live on the skin of other animals.
2. Ticks feed on the _____ of the animal on which it lives.
3. Ectoparasites are responsible for transmission of _____.
4. In the pour-on method, the preparation is poured along the _____ of an animal.
5. Some of the ectoparasitides can be injected into the animal through _____ route.

C. Mark True or False

1. Heavy infestations of ectoparasites are usually associated with poor health of animals.
2. A single treatment with ectoparasiticide may be sufficient for controlling ectoparasites.
3. Dipping of animal can be done in all the seasons.
4. Ectoparasitides are not applied to sick animals.
5. Ectoparasite control cannot be achieved by an integrated approach.

Glossary

Autoclaving: Sterilising equipment by subjecting them to high pressure saturated steam at 121°C for around 15–20 minutes.

Bolus: A rounded mass of feed in which medicine can be mixed and given orally to the animal.

NOTES

Communicable disease: Diseases which can be transmitted from infected animals to healthy animals either directly or indirectly.

Deworming: Practice of giving medicines to the animals to help them get rid of internal parasites or worms.

Drenching gun: Used for administration of fluids containing medicines, etc., to farm animals.

Ectoparasites: Organisms which live on the skin of other animals and are responsible for causing detrimental effects on the skin and the overall health of the animals on which they live.

Endemic diseases: Diseases which are present in a population at a constant rate but do not disappear completely from the population.

Freeze-drying: Preservation method of rapidly freezing an item and then subjecting it to high vacuum.

Heifer: The young female cattle or buffalo from one year of age up to the age of first calving.

Incineration: Complete and total burning of waste material.

Intradermal route: A route of medicine administration in which medicine is injected into the dermis which lies just below the epidermis.

Intramuscular route: A route of medicine administration in which medicine is injected directly into the muscle.

Sterility: Incapability to produce offspring.

Subcutaneous route: A route of medicine administration in which medicine is injected directly below the dermis and epidermis.

Vaccine: A fluid that helps the animal's body to become immune to a disease caused by certain germs or micro-organisms.

Zoonosis: An infectious disease which can be transmitted by farm animals to human beings and vice versa.