

ARTIFICIAL INSEMIATION

NTQF Level -II

Learning Guide –43

Unit of Competence: - Assist in the Identification of Reproductive Diseases and Fertility Problems

Module Title: - Assisting in the Identification of Reproductive Diseases and Fertility Problems

LG Code: AGR ATI2 M07 0919 LO1-LG-43

TTLM Code: AGR ATI2 TTLM 0919v1

LO 1: Identify symptoms of reproductive diseases and fertility problems of dairy animals

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

- ✓ Identifying symptoms of reproductive disease
- ✓ Distinguishing signs of infertility

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

- ✓ Identify symptoms of reproductive disease
- ✓ Distinguish signs of infertility

Learning Instructions:

1. Read the specific objectives of this Learning Guide.
2. Follow the instructions described below 3 to 6.
3. Read the information written in the information “Sheet 1 and Sheet 2”.
4. Accomplish the “Self-check 1 and Self-check 2” **in page -8 and 15** respectively.

1. Introduction

Good dairy health management practices are based on good nutritional supply, housing, genetic improvement and close follow up. To avoid health problems in dairy cattle routine health care procedures should be followed. It is important to recognize the dairy cattle herd in general and then the individual cows in particular for any health issues. This can be done through attentive observation, touching individual cows, smelling and even by hearing sounds from cows. These are important points to identify health problems in the herd and to take appropriate action on time.

Fertility: - The desire and ability to mate, the capacity to conceive and nourish the embryo and finally the power to expel a normal calf and fetal membrane. Health cattle give expression to normal fertility by producing one viable calf per year.

Sterility: - Means an absolute inability to produce.

Infertility: Indicates a degree of reduced fertility, which results in failure to produce or delay in producing the annual live calf. Infertility interfere with the move from one generation to the other. Infertility has effect on efficient production of milk since pregnancy and parturition are necessary for the initiation and maintenance of lactation in the species.

Classification: -

Based on affected Parts infertility can be classified in: -

- a) Reproductive diseases
- b) Anatomical disorders
- c) Physiological (Functional) disturbance
- d) Management disturbance

1.1. Reproductive disease

1.1.1. Tuberculosis

Is a disease caused by a bacterium called mycobacterium tuberculosis and acute to chronic clinical manifestation.

Three main types: -

- ✓ Human type
- ✓ Bovine type
- ✓ Avian type

Transmission and spread

The disease is contagious and spread by contact with infected domestic and wild animals. The usual route of infection is by inhaling infected droplets which are expelled from the lungs by coughing. Calves and humans can also become infected by ingesting raw milk from infected cows. Because the course of disease is slow, taking months or years to kill an infected animal, an animal can spread the disease to many other herd mates before it begins to manifest clinical signs. Therefore, movement of undetected infected domestic animals and contact with infected wild animals are the major ways of spreading the disease.

Clinical signs

Emaciation, weakness, anorexia, fluctuating fever, chronic cough, difficulty of breath, enlargement of lymph nodes

Control and prevention

- ✓ Keep herd free by testing and slaughter of reactors
- ✓ Boiling of milk before drinking
- ✓ Routine meat inspection
- ✓ There of no treatment for animals (Expensive, long time)

1.1.2. Trichomoniasis (vibriosis)

Trichomoniasis is a venereal disease of cattle that causes early embryonic death, prolonged breeding, occasional abortions and infertility. It is caused by a small motile protozoan found only in the reproductive tract of the bull and cow. It is transferred to the cow's vagina from the bull during breeding migrate up to the uterus and cause the infection.

Clinical signs:

The key clinical signs are low conception rate, profuse discharge from the vulva, early abortion (2-4 months of pregnancy), pyometra- accumulation of pus in the uterus.

Prevention and control

No vaccines are available for its prevention, but using artificial insemination and virgin bulls aid in control. Bulls are the main carriers of Trichomoniasis and, once infected, remain infected for life but show no signs of disease.

Treatment

Infected animals should be culled

1.1.3. Leptospirosis

It is a contagious disease caused by a bacterium leptospira interrogans which is transmitted through contact to skin or mucous membrane and intake of contaminated urine, feed and water.

Clinical signs

Clinical signs in acute form in calves signs include fever, anemia, Inappetance, high mortality; chronic form in adults abortion, stillbirth, weak infected calves and kidney failure, Blood in the milk and reduced milk yield, Bitter test of the milk

Prevention and control

- ✓ Strict sanitary condition has to be performed
- ✓ Avoid contact with rodents
- ✓ All new animals should be isolated before introducing them to the herd
- ✓ Vaccination

Treatment

Treatment of sick animals with antibiotics like tetracycline, streptomycin and combined streptomycin and ampicillin could be used.

1.1.4. Brucellosis

Brucellosis is a contagious bacterial disease affecting mainly dairy cattle. It is an important disease of animals and humans with serious economic loss and health hazard in human beings. The disease in animals is characterized by abortions or reproductive failure. While animals typically recover, and will be able to have live offspring following the initial abortion, they may continue to shed the bacteria. Infection occurs through contaminated feed and water with discharges of aborted animal, fetal membrane, and insemination of semen from infected bull and consumption of unpasteurized milk.

Clinical Signs

Arthritis, early abortion specially in first calving, retained fetal membrane, abnormal vaginal discharge, birth of weak calves and infertility.

Prevention and control:

- ✓ Test and cull positive animals
- ✓ Vaccinating animals starting from 4-8 months of age.

Public health risks of Brucellosis

Brucellosis is a zoonosis highly infectious for humans causing a disease often called undulant fever or Malta fever, since it was first recognized in Malta during the 1850s. Symptoms in humans include intermittent or irregular fever, headache, weakness, profuse sweating, chills, weight loss and general aching. Infections of organs including the liver and spleen may also occur. Veterinarians, farmers, and abattoir workers are vulnerable to infection as they handle infected animals and aborted fetuses or placentae. The disease can also spread to people through consumption of unpasteurized milk coming from infected animals.

Prevention & Control

- ✓ Proper disposal of aborted foetus

- ✓ Disinfection of contaminated site
- ✓ Isolation of aborted animal
- ✓ Test and cull positive animals

Treatment

No satisfactory treatment

1.1.5. Vibriosis

Vibriosis (*Campylobacter fetus*) in cattle is an infectious bacterial disease of the genital tract causing infertility and occasional abortions. It is a venereal disease spread by infected bulls when they mate susceptible cows and heifers. It is considered to be the most important cause of infertility in cattle. Good vaccines are available, but it still causes losses simply because they are not used in many herds.

Infection introduced into a non-exposed or non-vaccinated herd will spread rapidly during breeding.

Repeat breeding activity is generally seen in animals that were assumed to be pregnant. Irregular estrus cycles are common. Absorption or expulsion of a small fetus probably explains the long estrus cycle seen with this disease. Varying degrees of vaginal inflammation and uterine infection are present but may be unrecognized. Abortion rates in infected herds generally run from 5% to 30%. Some females may carry the fetus longer and may abort a sizeable fetus 5 to 6 months into the gestation period. Retained placentas are common.

Diagnosis is confirmed by culture of the causative organism from cervical mucus or from an aborted fetus.

Vibriosis is somewhat self-limiting as most of the cattle recover within a year. Disease carriers are common, however, and new infection can spread to non-exposed animals.

The use of artificial insemination is also valuable in limiting disease spread. Most A.I. organizations test the semen to assure that it is free of vibriosis and trichomoniasis

The disease should be suspected when the majority of cows in a herd return to service (heat) either regularly or irregularly.

The disease is transmitted by a bacteria called *Campylobacter fetus*

The bull may carry the disease for long periods on the penis and in the Preputium.

The route of transmission is through: -

- ✓ Natural mating and
- ✓ Artificial Insemination (from contaminated semen)

In females, the Cervix, Vagina and Uterus become infected.

Clinical Symptoms

- ✓ In bulls no clinical symptoms are observed.
- ✓ In female - infertility.
- ✓ Irregular heat.
- ✓ Early embryonic death.

Diagnosis: -

- ✓ is made by isolating the bacteria.

In female animals

The bacteria can be isolated from

- ✓ Aborted fetus
- ✓ Fetal membrane
- ✓ Vaginal mucus

In male animals

The isolation is made from: -

- ✓ Semen or
- ✓ Perpetual washing

Control

- ✓ Only bulls free from infection should be used for semen production/reproduction (natural mating).
- ✓ Treating the semen with antibiotics reduce the risk of spreading the disease through AI.
- ✓ There is a vaccine against the disease.

1.1.6. BVD (Bovine Virus Diarrhea)

Bovine Virus Diarrhea virus infection can cause abortion, weak calves at birth, calves with brain damage (cerebellar hypoplasia) or other abnormalities of fetal development. Clinical signs in newborn calves infected with BVD can include fever, nasal discharge, diarrhoea and inability to move about normally (ataxia).

A diagnosis of BVD virus infection requires laboratory examination of the fetus or calf. A blood test may aid in the identification of infected cattle.

1.1.7. IBR (Infectious Bovine

Rhinotracheitis or "Red Nose") Infectious Bovine Rhinotracheitis virus is the cause of respiratory disease of cattle. However, in cows and heifers, this virus can also cause vulvovaginitis (inflammation of the vulva and vagina) and abortion. Abortion typically occurs about 20 to 45 days after infection.

A diagnosis of IBR-induced abortion is made by laboratory examination and testing of fetal tissues. A blood test may aid in the identification of infected cattle. The control of IBR infections can be accomplished by the use of vaccines.

1.1.8. Mycotic

Fungal or mycotic infection of the placenta is one of the most common. A cause of sporadic bovine abortion.

Providing good health (via good management and nutrition) and avoiding moldy feeds can reduce the incidence. When possible, depending on the availability and demand decrease the period of confinement, decrease cow density, and improve ventilation.

Self-Check -1	Written Test
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Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. Define fertility, infertility and sterility(3pt)
2. Write-down at least four reproductive disease of dairy cattle with their symptoms, treatment and control method (4pt)

Note: Satisfactory rating – 5 points

Unsatisfactory - below 95points

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

Answer Sheet

Score = _____

Rating: _____

Name: _____

Date: _____

Short Answer Questions

Reference

Feyisa girma.2016. Reproductive cattle diseases and fertility problems.

SNV. 2017. Dairy Cattle Health Management. Training Package for Dairy Extension Workers. Ethiopia, Addis Abeba.

Information Sheet-2	Distinguishing signs of infertility
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1.2. Distinguishing signs of infertility

1.2.1. Physiological (Functional) disturbance

1.2.1.1. Anestrous

Anestrous is considered as a problem when cows are not seen in heat. Failure to observe heat and heat detection must always be ruled out as the primary problem. Review the heat detection procedures and heat detection efficiency with the producer.

Pregnancy can be a prominent cause of anestrous and must always be ruled out before anything else. Other reasons for anoestrous are ovarian aplasia, which is a rare condition when one or both ovaries are absent. It is caused when the gonadal ridge does not form correctly.

Palpation is the best diagnostic method. There may be partial aplasia, when 'only one ovary does not form.

1.2.1.2. Abortion

Is expulsion from the uterus of a living fetus before it reaches a viable age or expulsion of a dead fetus of recognizable size at any stage of the gestation period. The cause of abortion could be infectious or non-infectious. Non-infectious causes of abortion include heat stress, hypoxia, and acidosis. Severe trauma may rarely cause abortion.

The most important causes of abortion are infectious in nature.

Prevention of abortions

- ✓ Proper hygienic and bio-security measures in the cow's environment and feed storage
- ✓ Isolation of aborting cows and immediate removal of aborted materials
- ✓ Systematic evaluation of the feed for mycotoxins and other phytotoxins
- ✓ Adequate immunization against infectious diseases causing abortion
- ✓ Maintenance of adequate breeding and treatment records to avoid insemination of pregnant cows and administration of drugs that may cause abortion.
- ✓ A balanced nutritional program
- ✓ Genetic selection and a functional record keeping system

1.2.1.3. Retained placenta

Failure to expel the fetal membranes within 12 to 24 hours after calving. Abortion, stillbirth, twin birth, dystocia, induction of parturition with PGF₂alpha and metabolic disorders, especially milk fever and high environmental temperature, advancing age of cows, premature birth, placentitis and nutritional disturbance increases the incidence of retained fetal membrane. It predisposes cows to acute puerperium metritis and endometritis post-partum through bacterial multiplication and impairment of immune function.

Clinical signs

Macerating and discolored member are seen hanging from the vulva after 24 hours. Occasionally there is foul smelling, discharge, inappetance and decreased milk yield. Systemic infection is not common

Treatment

Non drug treatment such as daily gentle traction of the membrane is recommended to see if the detachment has occurred.

Drug treatment such as immediate post-partum administration of PGF₂alpha, oxytocin or calcium and Anti-microbial therapy (Intrauterine bolus or systemic antibiotics) Prevention of retained placenta is appropriate pre parturition management

1.2.1.4. Dystocia

Dystocia is difficult to give birth in animals. It arises from different causes like myometrial defects, metabolic abnormalities like hypocalcaemia, fetal over size, physical and anatomical immaturity of the dam, abnormal presentation of the fetus, lack of labor due to nutrition deficiency, insufficient dilation of the birth canal, fetal hormone deficiency, fetal death and other miscellaneous causes.

Clinical Signs

- ✓ It is suspected 2-3 hours after burst of amniotic fluid
- ✓ Force full straining without fetal presentation
- ✓ Presentation of only single leg
- ✓ Lying down by stretching legs away

Management: Emergency veterinary assist is needed when the case happens.

1.2.1.5. Delayed ovulation in cattle

It occurs due negative energy balance, heat stress, certain infections such as Bovine Viral Diarrhea(BVD) and Infectious Bovine Rehinotrachitis (IBR), sub luteal levels of progesterone (treatment with progesterone/progestagen releasing devices, inadequate luteal function)

Prevention of delayed ovulation

It is important to ensure a timely ovulation in relation to service. By making sure that ovulation occurs within 7-18 hours after AI, a satisfactory conception rate can be achieved.

- ✓ Administration of GnRH around even during time of AI service
- ✓ Infantilism (lack of maturity)
- ✓ Is a condition characterized by under developed reproductive organs of young heifers or functional disturbance in physiologically growing heifers?

It can be caused due to: -

- ✓ inadequate feeding in newborn calves,
- ✓ Poor health management of sick young's,
- ✓ debility conditions, and
- ✓ Isolation from stimulant opposite sex.

Prevention and control

Can be achieved through sensible management of young heifers and skillful veterinary

interference of diseased young animals. Allowing teaser bull, free exercise, and massage and stimulating reproductive Organs.

1.2.1.6. Cystic Ovarian Disease

Cystic ovarian disease in cows is usually seen in the first two months post calving. It occurs most frequently during the post-partum period, 30 to 60 days after calving, when normal ovarian activity usually resumes.

Clinical signs of cystic ovarian disease

The major signs are Hyperestrogenisation, Nymphomania – permanent estrus behaviour (8-10 days), Mounting of other cows, decreased milk production, Cow is not observed in heat, Prolonged intraoestrus interval, Anoestrus

Treatment of cystic ovarian disease

Modern treatment in cattle addresses the correction of factors responsible for the development of the condition like nutritional and metabolic disorders and Hormonal imbalances.

1.2.1.7. Persistent corpus luteum

Persistence of corpus luteum on the ovary beyond day 20 leading to functional disturbance of corpus luteum which is characterized by absence of heat and pregnancy. Uterine infections, including pyometra, high milk production especially in early post-partum period, prolonged treatment with glucocorticoids, High level of Concentrated feed, Obesity or Emaciation, Dystocia, Retention of fetal membrane,

Uterine distention (Fetal Mummification, maceration, pyometra) and Decreased endocrine activities.

Clinical signs

Complete absence of heat signs.

Treatment

Elimination of all predisposing factors more over massage of ovaries and Uterus, vitamin, and hormonal therapy.

Administration of Luteolytic doses of PGF₂ α combined with a dose of GnRh analogue approximately 48-56h later to stimulate ovulation.

Prevention:

It's recommended to conduct rectal examination of anestrus cow after 50-60 days of parturition and at 15-18 month of age (age at first service) to curb the problem as early as possible.

1.2.1.8. Still birth

Stillbirth parturition is defined as calves that are either born dead, and or die within 48 h after calving. Stillbirth parturition does constitute considerable financial losses to the dairy farmer in different ways. This disorder is associated with increased risk of developing metritis and retained placenta and has a considerable negative effect on lactation performance, conception rate and longevity. Stillbirth parturition reduces the number of calves for sale and replacement.

One of the best management practices to reduce stillbirth parturition may be utilizing sire and daughter calving ease information when selecting sires to breed heifers. Herd managers should review calving procedures with their veterinarian to assure that proper timing and calving assistance techniques are used when providing assistance during parturition. In addition, providing a good environment for heifers and cows to minimize stress before parturition can reduce stillbirth incidence.

1.2.1.9. Infantilism; lack of maturity

Is a condition characterized by under developed reproductive organs of young heifers or functional disturbance in physiologically growing heifers.

Predisposing factor: -

Poor management

1. Inadequate feeding in newborn calves,
2. Poor health management of sick young's,
3. Debility conditions,
4. Isolation from stimulant opposite sex

In infantile heifers even if maturity of reproductive organs grows to its physiological state following normal estrus cycle conceiving possibility is guarded.

Control and prophylaxis

achieved through sensible management of young heifers and skillful veterinary interference of diseased young animals.
Allowing Teaser bull, free exercise, and massage and stimulating reproductive Organs.

1.2.2. Anatomical or Congenital disorders

1.2.2.1. Free martin

The Condition that occurs in the female member of heterosexual twins. Twins of different sex. Freemartinism is one of the most severe forms of sexual abnormality among cattle. It causes infertility in the female calf born with a male twin.

Freemartinism occurs when a female twin shares the uterus with a male. The placental membranes connect the fetus to the dam are shared, and the placental fluids are exchanged between the two fetuses. The exchange of fluid and blood between the two calves mixes the antigens responsible for carrying the unique sex characteristics of each calf. The twins develop with some sex characteristics of both the male and female.

This transfer of hormones and antigens causes the female's reproductive tract to be severely underdeveloped, and in some cases they express characteristics of a male reproductive system. Often the ovaries are underdeveloped and are not capable of producing eggs. The uterus is also underdeveloped, and the reproductive tract does not supply sufficient hormones necessary to maintain a pregnancy.

The oviducts, uterus, cervix, and most of the vagina fail to develop as tubular structures. The external genitalia generally appear normal. Occasionally, the clitoris is enlarged and the tuft of hairs at the tip of the vulva is more prominent. The mammary gland remains rudimentary. In such case, the heifer usually become sterile and can never become pregnant. The cause of the freemartin condition is still not fully understood.

1.2.2.2. Ovarian agenesis

Congenital form of infertility, which is characterized by absence of ovaries and infantile Genital tract.

1.2.2.3. Ovarian Hypoplasia

It is characterized by unilateral and / or bilateral rudimental smooth ovaries. Affected animals have infantile reproductive tract and never exhibit estrus.

1.2.2.4. Segmental aplasia of Mullerian ducts

It's a developmental defect of vagina, cervix and uterus while ovaries are normal. In this case cyclical sexual activity exists but severely affected cattle become sterile. Inbreeding of a bull upon his own daughters is one of the causes.

1.2.3. Management disturbance

Nutrition often directly affects reproductive capabilities. Calving intervals in excess of 12 months are often caused by nutritional stress (deficiency) at some point, either before the calving season or during the subsequent breeding season, which results in thin body condition and poor reproductive performance. The number one nutritional reason for poor reproductive performance is the lack of energy. Energy deficiency, particularly in postpartum cows, is most likely the major feeding factor involved in poor reproductive performance of dairy herds in Tunisia. It results from the feeding of poor quality forages, which in most cases, is coupled with inadequate supplementation. The end result is that follicular growth and development leading to first ovulation are affected and that cows in most negative energy balance is more likely to remain anoestrus.

Housing arrangement, concrete floors without adequate bedding and feet and leg problems are other factors associated with lowered detection of heat and reduced fertility in our herds. Cows do not have enough space to interact with their herd mates once on heat, making detection more difficult. In many cases we have seen slippery floors in our barns without bedding because straw shortage. The excessive (more than 60% of the total ration on a dry matter basis) use of concentrate feeds in the ration of lactating cows along with the prevalence of concrete floors increase the frequency of cows with sore feet among our herds. These cows dislike being mounted on coarse floors. They will exhibit fewer stands resulting in poor heat detection. Consequently, they will have significantly longer calving to service and calving to conception intervals. Research showed that mounting activity was reduced

by almost the half when cows were left on concrete as opposite to softer floors while the duration of oestrus activity was reduced by 25%.

Effect of ambient temperature and relative humidity on reproduction

Among all environmental stressors, the temperature and the relative humidity are the major factors, which affect the reproductive performance of dairy cows. One aspect of the temperature effects is heat stress, which is caused by high ambient temperature and aggravated by high relative humidity. The Temperature-Humidity Index (THI) is a widely used tool to assess the impact of heat stress on dairy cows.

Self-Check -2	Written Test
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Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. _____condition that occurs in the female member of heterosexual twins. (3pt)
2. _____difficult to give birth in animals (1pt)
3. What are the predisposing factors of Infantilism? (2pt)
4. Write down Prevention of abortions(3pt)

Note: Satisfactory rating – 7points

Unsatisfactory - below 7 points

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

Answer Sheet

Score = _____

Rating: _____

Name: _____

Date: _____

Short Answer Questions

Reference

Chakurkar E. B., Barbuddhe S. B. and Sundaram R. N. S. (2008) Infertility in farm animals: causes and remedies. Technical Bulletin No: 15, ICAR Research Complex for Goa (Indian Council of Agricultural Research), Ela, Old Goa-403402, Goa, India.

Feyisa girma.2016. Reproductive cattle diseases and fertility problems

ARTIFICIAL INSEMIATION

NTQF Level -II

Learning Guide- 44

**Unit of Competence: - Assist in the
Identification of Reproductive Diseases and
Fertility Problems**

**Module Title: - Assisting in the Identification of
Reproductive Diseases and Fertility Problems**

LG Code: AGR ATI2 M07 0919 LO2-LG-44

TTLM Code: AGR ATI2 TTLM 0919v1

LO 2: Take appropriate measures to prevent reproductive diseases or infertility of dairies

Instruction Sheet-2	Learning Guide #44
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This learning guide is developed to provide you the necessary information regarding the following **content coverage** and topics –

- ✓ Taking measures to prevent the transmission of zoonosis and venereal diseases.
- ✓ Recognizing existing and potential hazards in the workplace
- ✓ Selecting personal protective clothing and equipment

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

- ✓ prevent the transmission of zoonosis and venereal diseases
- ✓ distinguish signs of infertility and disease
- ✓ provide advice to beneficiaries in accordance to the enterprise guidelines.
- ✓ recognize, assesse risk and control existing and potential hazards
- ✓ select, use and maintain personal protective clothing and equipment

Learning Instructions:

1. Read the specific objectives of this Learning Guide.
2. Follow the instructions described below 3 to 4.

3. Read the information written in the information “Sheet 1, Sheet 2, Sheet 3, Sheet 4” and Sheet 5.
4. Accomplish the “Self-check 1, Self-check t 2, Self-check 3 and Self-check 4” in page -20, 23, 26,30 and 32 respectively.

Information Sheet-1	Take appropriate measures to prevent reproductive diseases or infertility of dairies
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2.1. Take appropriate measures to prevent reproductive diseases or infertility of dairies

2..1.1. Consider the farm’s structure & local situation when choosing animal

- ✓ The selection of breeds takes into account market requirements, feed availability, resistance to diseases and environmental conditions.

2.1.2. Prevent the entry of diseases onto the farm.

- ✓ Have secure boundaries/fencing.
- ✓ Avoid direct contact of visitors with animals and take safety measures in precaution of spreading of diseases.
- ✓ Have bio security measures in place to minimise the risk of spread of disease within the farm and between other farms (transport cattle only in cleaned and disinfected vehicles, dispose fallen stock properly and have a contingency plan for an infectious disease outbreak).
- ✓ Farmers should try to source animals of known disease status and control their introduction onto the farm.
- ✓ Special policy is recommended for introducing stock of unknown disease status.
- ✓ If possible, utilise disinfectant as a means of undertaking cleaning and disinfecting of boots/clothing, vehicles and facilities.
- ✓ Only use clean equipment from known source

2.1.3. Have an effective herd health/ disease health management programme in place

- ✓ Use a recognised system that allows all animals to be identified individually from birth to death.
- ✓ Develop an effective herd health management program focused on prevention that meets the farm's needs as well as regional and national requirements.
- ✓ Regularly check animals for signs of disease.
- ✓ Sick animals with contagious diseases should be attended to, quickly and in an appropriate way. They should be isolated when necessary.
- ✓ Keep written records of all treatments and identify treated animals appropriately.
- ✓ Manage animal diseases that can affect public health (Zoonoses).

2.1.3.1. Set up reproductive health program: -

An important point here is solving fertility problems.

Once the fertility problem is resolved, it is paramount to establish a goal of one calf per year and cow.

This program requires: -

- A. Adequate feeding,
- B. Adequate housing,
- C. Adequate health management (veterinarian--cow appointment)
 - 1. Check for uterine involution
 - 2. Check for cyclicity,
 - 3. Check for vaccination program and
 - 4. Scheduled treatment

Self-Check -1	Written Test
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Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. What points we carryout to prevent the entry of diseases onto the farm. (3pt)
2. What are the reproductive health program requiring? (2pt)

Note: Satisfactory rating – 3points

Unsatisfactory - below 3 points

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

Answer Sheet

Score = _____

Rating: _____

Name: _____

Date: _____

Short Answer Questions

Reference

Sustainable Agriculture Initiative (SAI) 2009. Principles & Practices for Sustainable Dairy Farming.

Eaknath B. Chakurkar. 2008. Infertility in Farm Animals: Causes and Remedies, Animal Science Section ICAR Research Complex for Goa Ela, Old Goa - 403402, Goa, India

Information Sheet-2	Taking measures to prevent the transmission of zoonosis and venereal diseases.
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2.2. introduction

The word '**Zoonosis**' (Pleural: Zoonoses) was introduced by Rudolf Virchow in 1880 to include collectively the diseases shared in nature by man and animals. Later WHO in 1959 defined that Zoonoses are "those diseases and infections which are naturally transmitted between vertebrate animals and man". Zoonoses include only those infections where there is either a proof or a strong circumstantial evidence for transmission between animals and man.

This is a systematic review of the role of awareness and educational programmes in the prevention and control of zoonotic diseases. To address prevention and control of zoonotic diseases in the general public, there is need for implementation of effective interventions. The awareness creation should involve the use of various mass media like: television, radio, internet, video show, leaflet and booklet distribution, bill-board and sign post and should be done to meet individual cultural group and social economic status. Combination of these two interventions by any organisation, any country or even at global level would be of great help to prevention and control for zoonotic diseases, reduce the global burden of zoonoses and also promote the health of the general public. There can be high effectiveness in public

health measures towards zoonotic diseases prevention and control, if educational programmes and awareness are included as part of the structured programme, especially when delivered together.

Venereal disease- disease transmitted through sexual.

2.2.1. Disease Control Measures

Control: is the reduction of the morbidity and mortality from diseases, and is a general term embracing all measures intended to interfere with the unrestrained occurrence of disease, whatever its cause.

Methods of Control

1. **Quarantine** - It is the isolation of animals that are either infected or suspected of being or non-infected animals that are at risk. Quarantine is used to isolate animals when they are imported from countries where exotic diseases are endemic. In this case suspected animals are isolated until infection is either confirmed or discounted.

2. **Creation of unfavourable environment:** this may be related to the livestock or the environment.

3. **Disinfection-** it involves the destruction of pathogenic organisms on inanimate objects, usually by physical or chemical means. All disinfectants are effective against the vegetative forms of organisms but not necessarily against the spore form of the organisms.

4. **Immunization** - It is the process by which antibody is produced or administered for the prevention or treatment of disease. Generally, there are two types of immunity.

a) **Natural immunity** - It is attributed to antibodies present or appearing without obvious external stimulus.

b) **Acquired immunity-** is that which an animal develops or receives at any time after birth.

Active immunization-follow actual injection and also artificial stimulation with living or attenuated microorganisms, dead organisms or their components or products.

Passive immunization- is the result of natural transfer of antibodies from the mother to the foetus or new born animal or the injection of antitoxins and other antiserum.

For Zoonotic diseases

- ✓ Appropriate treatment of cases
- ✓ Educate the public to:
 - Prevent fecal contamination of soil, water, human and animal foods
 - Cook beef and pork
 - Use latrines
 - Avoid drinking untreated milk or eating products made from untreated milk
 - Eliminate infected animals
 - Use barrier precaution (gloves and clothing in the handling of carcasses and products of potentially infected animals)
 - Keep dogs and cats at home and immunize them
 - Destroy stray animals where rabies is endemic
 - Bury carcasses of animals intact
 - Vector control and elimination of reservoir host
- ✓ Education of workers to control dust by ventilating rooms of hazardous industries where wool and goat's hair is processed.

Self-Check -2	Written Test
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Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. Define disease control (3pt)
2. Write down the types of disease control method(4pt)
3. Define zoonotic disease. (3pt)

Note: Satisfactory rating – 7points

Unsatisfactory - below 7 points

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

Answer Sheet

Score = _____
Rating: _____

Name: _____

Date: _____

Short Answer Questions

Information Sheet-3	provide advice to beneficiaries
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2.3. Important advice to improve fertility

1. Surveys and infertility camps in field by field veterinarians will provide information about fertility status. This will also help to plan future reproduction and production programs in livestock industry.
2. As reproduction is directly related with production, better fertility will reduce the production loss and improve the economy of dairy industry.
3. Use of advance scientific knowledge to reach root causes of the problem and use of technologies like synchronization of estrous, ultrasonography, culture and antibiotic sensitivity test for diagnosis etc by field workers will help to improve fertility status.

There is need of training farmers for oestrous detection. AI is an important biotechnology available at door step of farmers but well trained technician/veterinarian is essential to get optimum results.

Untrained/ raw inseminator is responsible for not only low conception rate but also for increased risk of damaging reproductive system of animals, hence this job should be assigned to a well trained professional. Proper timing of AI can enhance the conception rate.

For the maintenance of high breeding efficiency, it is primarily essential to maintain good level of general health, and thus prevent the onset of debilitating diseases. Animals do resist adverse influences which might interfere with the genital functions,

but the resistance is largely dependent on the inherent power of constitutional fitness to a great extent.

Balanced feeding including greens and mineral mixture is essential for normal reproductive performance. Sufficient greens, mineral supplementation and correction of negative energy balance improve fertility. Additional feed allowance and mineral supplementation during last trimester of pregnancy and peak of lactation i.e. steaming up is advised to get a healthy calf and consistent yield.

In selenium-deficient areas provide supplemental selenium as dry feed or injection to all dry cows.

Provide about 160,000 units of vitamin A (One milligram of carotene is equivalent to 400 units of vitamin-A from all sources (natural and supplemental)).

Endocrinological (Hormonal imbalance) infertility Feeding of Areca leaves/ waste should be avoided. In delayed ovulation chlomiphen citrate can be used from day of expected estrous for 3 days. HCG can help to get conception in cystic ovarian degeneration. Use of hormones should be limited and only be done when unavoidable.

Infectious Infertility Maintain a history of herd vaccinations, movement of cattle to and from other premises, and management and origin of bulls. Keep reproductive history records of cows, including number of abortions, conception rate, and approximate breeding dates.

Whenever there is abortion identify aborting cows and isolate them from the rest of the herd. This helps to prevent spread of infection. Testing for Brucella should always be a part of every pre-breeding evaluation. Always conduct test for specific infections. Use blood tests as well as bacterial or viral cultures in diagnosing specific infections. If an infection is identified, treat, vaccinate or cull infected cows as indicated.

CAUTION: Most of the diseases that cause abortions in cattle are zoonotic and can be easily transmitted to humans. Aseptic procedures in handling aborted fetuses and associated tissues, when examining the animal's reproductive system is essential. Use of disposable sterilised plastic gloves protects both the technician and animal from contamination.

Self-Check -3	Written Test
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Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

4. What are the important points advised to improve fertility of cattle? (5pt)

Note: Satisfactory rating – 3points

Unsatisfactory - below 3points

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

Answer Sheet

Score = _____

Rating: _____

Name: _____

Date: _____

Short Answer Questions

2.4. Recognizing existing and potential hazards in the workplace

Addressing biohazards

As a general principle, closed farming systems and all-in all-out systems are recommended from a food safety and biosecurity point of view. Owners or managers of livestock should:

- ✓ Establish a working relationship with a veterinarian to ensure that animal health and welfare and disease notification issues are addressed.
- ✓ Seek veterinary assistance to immediately investigate any suspicion of serious disease.
- ✓ Comply with regulations concerning restrictions on animal movements.
- ✓ Separate diseased from healthy animals such that transmission of infection does not occur and, where necessary, cull diseased animals.
- ✓ Practice breeding and selection such that animals well suited to local conditions are raised and detailed breeding records are kept.
- ✓ Acquire animals (including breeding stock) only from sources with a known, safe health status, where possible with supporting health certificates from veterinarians.
- ✓ Source fresh or frozen semen, ova and embryos from sources with a known, safe health status, accredited by the Competent Authority of the country of origin, with appropriate health certification.
- ✓ Keep records of all breeding stock, semen or embryos used on the premises, the animals upon which they were used, the breeding dates and outcomes.

- ✓ Keep newly arrived animals separate from resident stock for an appropriate period to monitor them for diseases and infestations in order to prevent transmission of such conditions.
- ✓ Ensure that, wherever necessary, newly arrived animals are given time to adapt to new feeding regimes, are not overcrowded, and that their health is regularly monitored.
- ✓ Ensure that equipment and instruments used in animal husbandry are suitably cleaned and disinfected between each use.
- ✓ Effectively remove or dispose of dead and fallen stock where possible so that other animals cannot come into contact with carcasses and that carcasses do not contaminate the pasture or drinking water, and keep records of all such disposals.

Addressing physical hazards

Owners or managers of livestock should apply animal welfare practices in accordance with regulatory requirements, and in particular:

- ✓ Ensure that people working with animals are properly experienced and trained for the tasks they should perform.
- ✓ Ensure that facilities and equipment are properly designed and maintained to prevent physical injury.
- ✓ Ensure that animals are handled and transported appropriately.

Hazards and corresponding control points

	Hazards	Control points
1	Biohazard	
	Introduction of pathogens and contaminants	<ul style="list-style-type: none"> ✓ Sources of animals (horizontal and vertical transmission) ✓ Sourcing of breeding stock ✓ Breeding procedures ✓ Semen and embryo quality ✓ Bedding ✓ Feed and water ✓ Records of acquisitions and animal movements. ✓ Health and hygiene of visitors and personnel ✓ Contact with other animals (including wildlife/rodents/insects, etc.) ✓ Vehicles/clothing/instruments/equipment ✓ Infected/contaminated carcasses, tissues or secretions
	Transmission of and contaminants	<ul style="list-style-type: none"> ✓ Animal housing and population density ✓ Disease diagnosis (horizontal and vertical transmission) ✓ Health and hygiene of visitors and personnel ✓ Vehicles/clothing/instruments/equipment ✓ Infected/contaminated carcasses, tissues or secretions ✓ Bedding management

		✓ Insect or pest vectors
	Microbial and parasitic infections on pastures and paddocks	✓ Pasture management ✓ Microbial/parasite diagnosis
	Microbial load on skins	✓ Environment of animals ✓ Waste management ✓ Bedding management ✓ Population density
	Airborne infections and contaminations	✓ Environment of animals ✓ Waste management ✓ Bedding management ✓ Population density
	Airborne infections and contaminations	✓ Farm location ✓ Animal housing and ventilation ✓ Population density
	Carrier animals shedding pathogens	✓ Animal management ✓ Diagnosis ✓ Population density
	Increased susceptibility to pathogens	✓ Animal management (incl. transport) ✓ Diagnosis ✓ Population density
	Chemical Hazards	
	Chemical contamination of environment, feed and water	✓ Farm location ✓ Animal movement ✓ Use of agricultural chemicals ✓ Feed and water quality ✓ Equipment and building materials ✓ Hygiene practices
	Toxins of biological origin (plants, fungi, algae)	✓ Feed, pasture and water quality ✓ Farm location ✓ Animal movements ✓ Feed production, storage and transport
	Residues of veterinary medicines and biologicals (incl. medicated feed and water)	✓ Treatment of animals ✓ Sales and prescription control ✓ Record keeping ✓ Residue control ✓ Quality of feed and water
	Physical Hazards	
	Broken needles and other penetrating objects.	Treatment of animals
	Injuries	✓ Farm location ✓ Infrastructure ✓ Population density ✓ Animal handling ✓ Construction and equipment

Self-Check -4	Written Test
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Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

5. What are Owners or managers of livestock should do to address hazards(3pt)
6. Write down the types of hazards and give two example to each hazards(7pt)

Note: Satisfactory rating – 7points

Unsatisfactory - below 7 points

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

Answer Sheet

Score = _____

Rating: _____

Name: _____

Date: _____

Short Answer Questions

Information Sheet-5	Selecting personal protective clothing and equipment
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2.5. Selecting personal protective clothing and equipment

All equipment (including clothing affording protection against the weather) which is intended to be worn or held by a person at work which protects them against one or more risks to their health and safety. Personal protective equipment PPE refers to equipment used as a barrier between an individual and a hazard that could result in an injury or occupational illness.

- ✓ Boots
- ✓ Overalls
- ✓ Gloves
- ✓ Sun protection (sun hat, sunscreen).
- ✓ Eye goggles

Self-Check -5	Written Test
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Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. Write down the PPE and their use(5pt)

Note: Satisfactory rating – 4points

Unsatisfactory - below 4 points

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

Answer Sheet

Score = _____

Rating: _____

Name: _____

Date: _____

ARTIFICIAL INSEMIATION

NTQF Level -II

Learning Guide –45

**Unit of Competence: - Assisting in the
Identification of Reproductive Diseases and
Fertility Problems**

Module Title: - Assisting in the Identification of Reproductive Diseases and Fertility Problems

LG Code: AGR ATI2 M07 0919 LO3-LG-45

TTLM Code: AGR ATI2 TTLM 0919v1

LO 3: Record data and clean up on completion of work

Instruction Sheet-4	Learning Guide #45
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This learning guide is developed to provide you the necessary information regarding the following **content coverage** and topics –

- ✓ Keeping and reporting infertility information based on the observed signs of diseases.
- ✓ Disposing wastes according to recommended hygiene standards.

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

- ✓ Keep and report Infertility information is based on the observed signs of diseases.
- ✓ Dispose waste is of according to recommended hygiene standards.

Learning Instructions:

1. Read the specific objectives of this Learning Guide.
2. Follow the instructions described below 3 to 4.
3. Read the information written in the information “Sheet 1 and Sheet 2”.

4. Accomplish the “Self-check 1, and Self-check 2” in page -37 and 39 respectively.

Information Sheet-1	Keeping and reporting infertility information based on the observed signs of diseases.
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3. Introduction to Record keeping

When a problem arises in an enterprise, be it a disease, a chemical hazard issue or a physical safety matter, record keeping is central to any effort to trace the source of the problem and eliminate it. Hence, as far as is practicable, farmers should keep records of:

- ✓ All animal populations on the farm (groups or individuals as relevant).
- ✓ All animal arrivals, including their identification marks or devices, origin and date of arrival, to ensure that movements of incoming animals are traceable to their source.
- ✓ Movements of animals around the enterprise.
- ✓ Changes to feeding or health regimes, and any other management changes that may occur.
- ✓ Origin and use of all feeds, drugs, disinfectants, herbicides and other consumable items used on the farm.
- ✓ Known diseases/infections, diseased/infected animals and mortalities, as far as possible giving details such as dates, diagnoses (where known), animals affected, treatments and results

Maintaining records

All the data that are pertinent to the herd and particular cow should be kept recorded and properly.

- A. On set of heat

- B. Service day
- C. PD
- D. Date of calving
- E. Abortion
- F. Estrus expectation chart
- G. Vaccination
- H. Other health status and
- I. Production records must be maintained.

Health record format

Owners Name:								
Region:								
Wereda:								
Kebele:								
No	ID/Name	Date	Major signs	Treatment Given			Response	Remark
				Medication	Duration	Dosage		

Breeding record format

Owners Name:							
Region:							
Wereda:							
Kebele:							
Dam ID	Dam Breed	Dam birth date	Sire ID	Sire breed	Date of mating	Due date	Remark

Self-Check -1	Written Test
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Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. What are the information farmers should record? (5pt)

Note: Satisfactory rating – 3points

Unsatisfactory - below 3 points

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

Answer Sheet

Score = _____

Rating: _____

Name: _____

Date: _____

Short Answer Questions

Reference

SNV 2013. Breed Improvement and Fertility Management, Training Manual.

Information Sheet-2	Disposing wastes according to recommended hygiene standards.
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3.2. Disposing wastes according to recommended hygiene standards

Hygiene and disease prevention

Measures aimed at preserving cleanliness, preventing pathogen build-up and breaking possible pathways of transmission are essential in the management of any modern farming enterprise, regardless of the species or the farming system.

While the use of animal manure, animal slurry and human sewage sludge for fertiliser purposes is becoming increasingly common, enabling higher crop yields as well as sensible waste management, it may facilitate the transmission of food-safety-related diseases within or between herds or directly to humans. Therefore, systems for animal or human waste usage for fertiliser purposes should take into consideration relevant treatment methods as well as specific holding times before animals are allowed onto treated pastures. Suggested holding times are directly related to climatic conditions in the region in question (e.g. die-off of pathogens is faster at higher temperatures). As a general rule, neither animal nor human waste should be used on plants intended for direct human consumption unless it has been appropriately treated.

Precautions should aim at:

- ✓ Reducing contact between healthy animals and potentially infected animals.
- ✓ Maintaining the hygiene and safety of all facilities.

- ✓ Ensuring the health of all workers on the farm and the implementation of hygienic working procedures.
- ✓ Taking all appropriate measures to prevent contamination by vehicles entering and traversing the property.
- ✓ Minimising contact between livestock and professional or other visitors, and taking all hygienic measures necessary to reduce the possible introduction of pathogens and contaminants.
- ✓ Ensuring overall health of livestock through good nutrition and reducing stress.
- ✓ Maintaining an appropriate population density for the species and age group in question, either by following locally enforceable measures or by obtaining appropriate advice from recognised experts.
- ✓ Keeping records of animal populations in facilities/on farms.

Self-Check -2	Written Test
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Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. Elaborate the use of disposing waste and keep hygiene of all material. (5pt)

Note: Satisfactory rating – 3points

Unsatisfactory - below 3 points

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

Answer Sheet

Score = _____

Rating: _____

Name: _____

Date: _____

Short Answer Questions

Reference

FAO 2009. Guide to Good farming practices for animal production food safety. Italy, Rome.