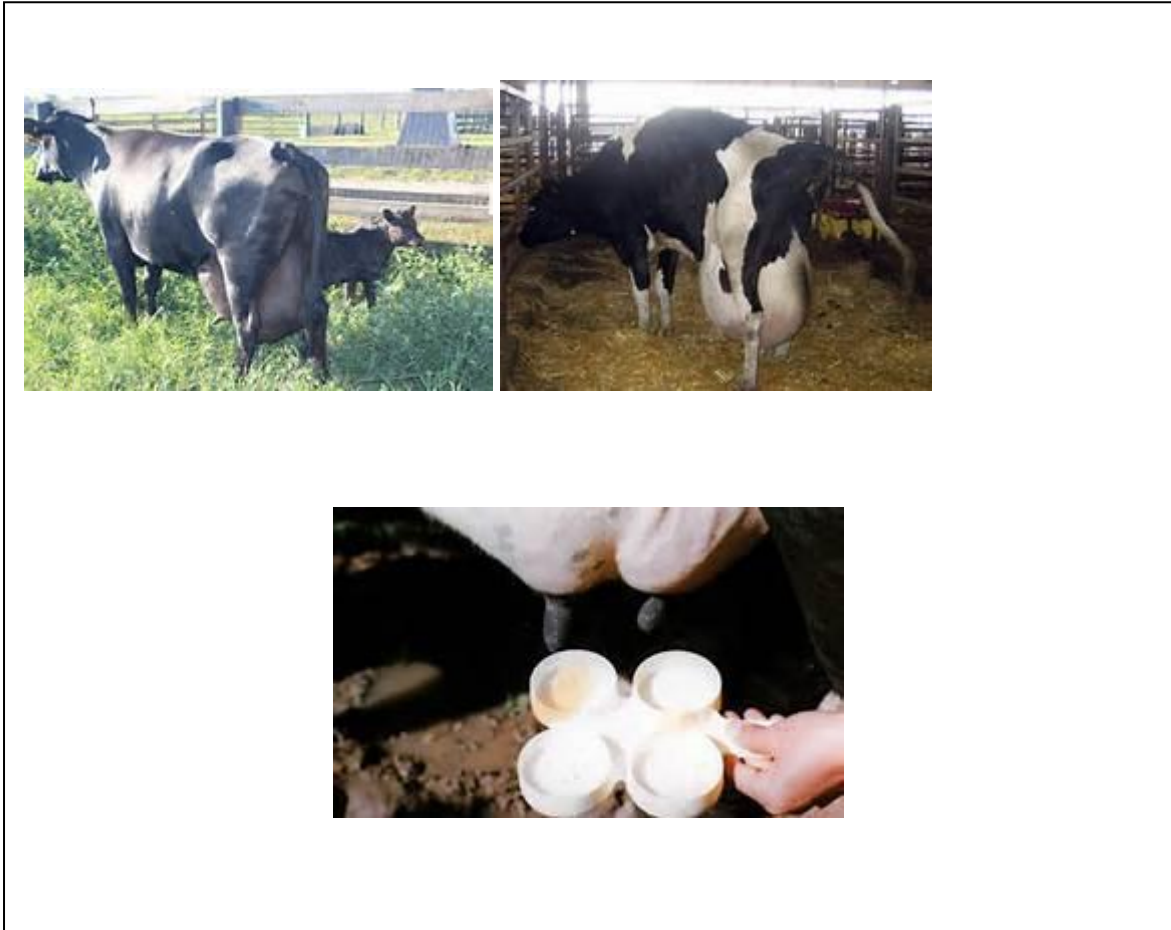




SWAZILAND DAIRY BORD
(Established in terms of the Dairy Act 28/1968)
**OPERATING AS SWAZILAND DAIRY DEVELOPMENT BOARD
TO PROVIDE DEVELOPMENTAL AND REGULATORY SERVICES
TO THE DAIRY INDUSTRY**



CATTLE DISEASES



- **How to identify a sick animal**

Once animals are sick, they tend to do the following:

1. They stand apart from the group (animals in labour also isolate themselves)
2. They are restless and lethargic.
3. They usually hold their head down.
4. Their eyes are dull and they show very little interest on their surroundings.
5. They often have a rough coat, they look weak and tired.
6. They do not like to feed.

- **General Bacterial Diseases**

- **Common Calf Diseases**

1. **CALF SCOURS (DIARRHOEA)**

This is a term that is used to describe diarrhea that affect young calves.

Causes of diarrhea

Age	Cause	Signs	Pre-disposing factor
3-5 days	E. coli	-watery diarrhoea, sudden onset - Death in 12-24hrs	- poor management - dirty environment
2wks	Salmonella	-bloody, smelly diarrhoea with mucus	- stress (no food, water, transport, overcrowding)
Few days	Cl. pepringes	- Bloody and smelly diarrhoea - Evidence of abdominal pain - The large and most active affected	- not known
3 wks	Diet	Lot of pasty diarrhea	-lot of milk consumption, poor milk constitution.

- i. **Bovine Tuberculosis (TB)**

This is an infectious disease caused by bacteria of the genus mycobacterium. It is a chronic debilitating disease, occasionally it can be acute. This disease affects all vertebrate species.

Causes

- i) *Mycobacterium tuberculosis* – human
- ii) *Mycobacterium avium* – avian (birds, chickens, turkeys etc)

iii) *Mycobacterium bovis* – bovine

All three may cause infection in host species other than their own.

Mycobacterium bovis can cause progressive disease in most vertebrates including man.

Pathogenesis

- Infection is through inhalation.
- This will lead to formation of foci in the lung (cattle and man) and intestinal tract in birds.
- Caseous lesions will form in adjacent lymph nodes from the primary foci as a result of lymphatic drainage.
- These lesions will grow forming tumor-like masses called tubercle.
- Tubercles will spread to other tissues and organs by lymphatogenous and haematogenous spread.

Inhalation _____ primary foci _____ Tubercles in LN _____ lesions in
In lungs
_____ lymph nodes _____ Other organs

Clinical Signs

- Intermittent hacking cough
- Enlarged superficial lymph nodes
- Weakness, anorexia, dyspnoea
- Emaciation
- Fever

Reservoirs

-Man and cattle

Control

-Test and slaughter all the positives

NO TREATMENT

ii. Black Quarter

Also called Blackleg, Quarter evil

This is an acute disease of cattle and goats caused by *Clostridium chauvoei*. It is characterised by emphysematous swelling in the heavy muscles ie, forelimbs and hindlimbs.

Pathogenesis

Clostridium occurs naturally in the intestinal tract of animals. This bacteria is passed onto the soil with faeces. It remains viable in the soil for many years. Once the soil is disturbed, spores are activated and they become infective.

Spores in soil _____ Ingested _____ Spores in big muscles

Black quarter is a disease that affects cattle or goats with the following characteristics:

- Breeds in excellent health
- Cattle with a high body condition score (fat)
- Young cattle, cattle between 6 months and 3 years are affected
- Disease is common in Summer and Autumn

Clinical signs

- Sudden onset
- Few cattle found dead without showing signs, with the affected limb lifted
- Acute lameness
- Marked depression
- Edematous and crepitation of affected limb
- Slight swelling of affected muscle.
- Black blood oozing out when cutting the affected muscle.

Control

Vaccination of cattle (calves between 6 months of age up to 3years). This is done once a year.

Prophylactic treatment with penicillin

When the disease has been confirmed it can be treated a with high dose of penicillin

iii. Tetanus

Tetanus is caused *Clostridium tetani*

Almost all mammals are susceptible

Pathogenesis

- C. tetani is found in the intestinal tract of animals and the soil
- introduced into the tissues through wounds
- absorbed by the nerves
- to the central nervous system

Clinical signs

- Seen 2 weeks infection
- Localized stiffness of the masseter muscles, neck and the hindlimbs
- The head is extended

- The tail becomes stiff
- Sweating
- Temperature is increased
- Death due to respiratory failure

Treatment and Control

- Because the signs are so sudden, usually treatment is futile.
- Vaccinate the animal before performing an invasive procedure.

iv. Botulism

This is a disease characterized by rapid fatal paralysis caused by ingestion of the toxin of *Clostridium botulinum*.

Sources of infection

- decomposing animal tissue and sometimes in plant tissue

Pathogenesis

- ingestion of Clostridium toxin together with plant/ animal tissue
- toxin in blood
- toxin absorbed by the nerves
- Toxin in the central nervous system

Clinical signs

- Muscle paralysis
- Disturbed vision
- Difficulty in chewing and swallowing
- Generalized progressive weakness
- Death is due to respiratory and/or cardiac paralysis

Treatment and control

- correction of any dietary deficiencies
- proper disposal of carcasses
- removal of decaying plant material or silage from the diet

v. Mastitis

This is the inflammation of the udder. It is characterized by a swollen, red, hot and painful udder. Mastitis can be clinical or sub clinical.

Sub-clinical

Cow normal
Udder normal
Milk normal

Clinical

Painful Udder
Hyperaemic
Swollen
Has temperature
Milk clotted

Causes of mastitis

1. Infection anywhere in the body
2. Chemical irritants (Antibiotics and teat dips)
3. Trauma / physical irritation – Malfunctioning machine
- Poor hand milking
4. Stress – Heat
-Transport
-Mud

Economic Importance

1. Poor quality milk is produced
2. Decrease shelf life of the milk
3. Adverse milk off flavours

Aetiology

- *Streptococcus. agalatia*
- *Staphylococcus. aureus*
- *Streptococcus non-agalatia*
- *Coliform (E. coli, Klebsiella, Pseudomonas)*
- *Corynebacteria*

Control of Mastitis

1. Routine clinical Inspection
 - California mastitis test (CMT) tells if quarter is affected.
 - Udder quality – teat shapes and lesion
 - lab culture – antibiotic sensitivity test
2. Data Inspection, especially when buying new cattle
 - Mastitis chart
 - Herd clinical mastitis report
3. Farm Inspection
 - Milking procedures
 - Milking environment

- Milking system
- Management practices

Treatment

1. Penicillin - for gram positives such as Streptagalactia, Strept non-agalactia
2. Cloxacillin – for Gram positive Staph aureus
3. Potentiated sulphur - for coliform mastitis
4. Supportive treatment such as NSAIDS and IV fluids

2. Tick Borne Diseases

Ticks

Ticks are obligatory blood sucking ectoparasites most types of terrestrial veterbrates. Ticks transmit a large number and variety of infectious agents. Tick feeding activity produces **host** reactions such s toxicosis (sweating sickness, tick paralysis), skin wounds, anaemia and death.

Because of the above mentioned reasons, there is need to control ticks. This is done mainly by dipping. This is done once a week or once every 2 weeks. Dipping is divided into:

- Spray
- Plunge
- Pour on

Life cycle

Pathogen _____	Parasite in host _____	Parasite multiplies _____	_____ parasite gets
into			
In tick	blood when	& breaks red	plasma and invade
	Tick feeds	blood cells	other cells

Once other cells are invaded, clinical disease is seen.

i. Babesiosis

Also called red water, biliary fever, tick fever.

This is a tick borne disease caused by a protozoan haemoparasite called babesia. Babesia is transmitted by the tick Boophilus decolaratus.

Aetiology

Babesia bovis and Babesia bigemina

Young animals are protected in endemic areas. This protection is usually up to 2 months. Infection is usually seen when these calves are put onto pasture.

Clinical signs

Infections can be peracute, acute, chronic or inapparent.

B. bigemina

- Fever up to 42 degrees C
- Malaise, inappetence
- Haemoglobinuria (red urine)
- Anaemia
- Liver and kidneys are enlarged and dark
- Spleen is swollen and pulpy
- Subcutaneous and Intramuscular edema, yellow gelatinous fat, thin watery blood.

B. bovis

- Vascular congestion of organs
- Central Nervous System signs
 - Inco-ordination
 - Teeth grinding
 - Coma
 - Death

Treatment and Control

- Berenil
- Forray 65
- Tick control

ii. Anaplasmosis

Per acute to chronic infectious diseases of ruminants characterised by anaemia, icterus and fever.

Aetiology

Anaplasma marginale – pathogenic
Anaplasma centrale – non-pathogenic
Anaplasma ovis – in sheep and goats

Transmission

Transmitted by ticks, boophilus and dermacenter spp

Clinical signs

- Anorexia, depression, reduced milk production
- Fever 41degrees Celsius

- Marked anaemia
- Weight loss
- Dehydration is noticeable
- Marked icterus
- Most affected animals succumb to hypoxia when moved or handled.
- Constipation then diarrhoea or vice versa
- Aggressiveness
- Some animals will recover on their own; these will then be carriers of diseases for life.
- The severity of the disease varies considerably with age.
- Calves undergo mild infections with little or no mortality
- In adult cattle, the disease is more severe and mortality is high

Treatment and Control

Control – dipping

Treatment – Tetracyclines – oxytetra
Hitet
Terramycin

iii. Heart Water

- Also called Cowdriosis

This is a non-contagious infection of ruminants transmitted by Amblyomma ticks

Clinical signs

- Fever, anorexia, depression, reduced milk production
- Hyperaesthesia
- Lacrimation
- Convulsions
- High stepping gait
- Exaggerated blinking of eyes
- Chewing movements

Post mortem:

- Hydrothorax
- Hydropericardium
- Edema
- Congestion of lungs
- Enlarged spleen
- Petechia
- Ecchymoses on mucosal + serosal surfaces

Treatment + Control

- Tick Control
- Treatment – tetracyclines

3. Metabolic Diseases

These are diseases that are not caused by a pathogen but are a result of poor management, or any other factors.

i. Milk Fever

This is also called parturient paresis or hypocalcaemia. This disease mostly occurs at or soon after parturition. It is caused by the sudden fall in plasma calcium levels.

Predisposing factors

1. Breed- Jersey, Channel Islands, Swedish red and white are more prone to disease.
2. Age- as age increases so does the disease incidence.
3. Parity-as parity increases so does milk production.
4. Diet-feeding high calcium diet 2weeks before parturition.
5. Management- increasing the body condition of the cattle before calving.
- treatment with tetracyclines before calving

Diseases that are associated with milk fever

- **Mastitis** – if the teat sphincter is open before calving, then the cow is most likely to have mastitis.
- **Dystocia** – the contractions will deplete calcium levels in blood.
- **Retained placenta**- no contractions therefore low plasma calcium levels.

Clinical signs

1. History- period, high producing cattle (20L and above)
2. weakness and depression, temperature is normal
3. Recumbence after some time
4. S-shaped neck (looking at its flank)
5. dilated pupils
6. muscle twitching

Treatment

Give calcium using both the intravenous and subcutaneous route.

ii. 2. Bloat

This is the abdominal distention due to excessive gas accumulation.

There are two types of bloat.

- a. Primary bloat (frothy bloat) -Caused by ingestion of highly fermentable feed which forms a layer that traps gas.
- b. Secondary bloat – caused by obstruction of the esophagus. This will interfere with eructation leading to accumulation of gas in rumen.

Clinical signs

- i. abdominal distention especially on the left flank
- ii. depression, temperature is normal
- iii. respiratory discomfort
- iv. frothing on the mouth
- v. increased respiratory rate
- vi. restlessness, kicking the abdomen, treading on hind limbs
- vii. self isolation
- viii. teeth grinding

Management

1. Push a stomach tube- gas will come out in primary bloat, nothing will come out in secondary bloat. Tube will not go through in secondary bloat.
2. Withdraw animals from offending feed.
3. Oral administration of liquid paraffin, bloat guard or cooking oil
4. In cases of respiratory distress, use trocar and canula or pocket knife.

iii. Traumatic Reticuloperitonitis

This is also called hardware disease or wire disease or traumatic gastritis. This is a disease of cattle resulting from perforation of the reticulum by a wire or nail. Cattle commonly have foreign objects in their stomachs because they do not discriminate against hard material in feed and they do not completely chew their food before swallowing. This disease is common in cattle that are fed greenchop, silage and hay that is made from fields that contain old and rusty fence or when pastures are on sites where buildings have recently been constructed or use of baling wire.

Aetiology

- Metallic object is swallowed by cow
- object in rumen
- contraction of the rumen
- perforation of rumen and stomach walls

This will lead to leakage of ingesta and bacteria causing contamination of the peritoneal cavity. There will be adhesions in the peritoneal cavity.

Clinical signs

- i. Sudden onset of ruminal atony
- ii. A sharp fall in milk production
- iii. Rapid and shallow respiration

- iv. Arched back, reluctance to move with elbows abducted
- v. Reduced faecal output
- vi. Lying down, getting up, stepping over barriers
- vii. Grunting sound

Prevention

- Avoid the use of baling wire
- keep cattle away from sites of new construction.
- Administration of magnets orally preferably after 18-24hours of fasting.

NO TREATMENT

4. Obstetrics and Gynaecology

Gynaecology - This is the scientific study and treatment of diseases and disorders affecting the reproductive system.

Obstetrics – this is the branch of medicine that is concerned with parturition (calving)

a. Disturbances of Pregnancy

The gestation period of a cow is nine months.

During this period, there are several disturbances that can occur leading to failure of the pregnancy to reach full term. These disorders are:

- I. **Abortion** – this is the expulsion of the fetus before time. Abortion can be caused by diseases, starvation, any infection in the body or even stress.
- II. **Fetal maceration** – this condition results when the fetus dies inside the uterus, the cervix will open and bacteria will gain entry into the uterus. The fetus will decompose and all the soft fetal tissues will be absorbed leaving only the skeletal part in the uterus.
- III. **Fetal mummification** – in this case, the fetus will die and the cervix will remain closed. Absorption of fetal fluids will take place leaving a very hard mass of fetal muscle and bones.

b. Parturition

This is the act of giving birth or calving. Successful parturition depends on the ability of the uterine muscles to contract and the capacity of the cervix to dilate. The whole process takes between 13hrs and 34hrs.

Signs of approaching parturition

- Slackening of the pelvic ligaments.
- Mammary secretions change from transparent to opaque.
- Drop in body temperature by about 0.6 degrees.
- Occasional straining and restlessness of the cow.
- Partial anorexia and colic signs are evident.
- Standing and lying down frequently.
- Increase in heart rate

- Protrusion and rupture of the water bag.
- Most cows are recumbent till calf is born.

Stages of labour

First stage: Cervical dilatation (6hrs to 24hrs)

- Onset of myometrial contractions (contraction of uterine muscles)
- Cervix begins to dilate
- Fetus rotates and extends its limbs
- The cow is restless and has partial anorexia.
-

Second stage: Fetal expulsion (30min to 4hrs)

- Appearance of abdominal contractions
- Uterine contractions are now stronger.
- Protrusion and rupture of the water bag.
- Cow is straining and fetal parts are seen in the vagina.
- Cow is staring, lying down, standing up and kicking its belly.
- Expulsion of the fetus.

Third stage of labour: Expulsion of placenta (up to 6hrs)

- Uterus contracts faster than before but with very little force.
- Fetal membranes are expelled.

c. Dystocia

This is difficulty in calving. It is commonly seen in heifers that are calving for the first time, can be hereditary or it can be caused by hormonal imbalances.

Causes

Maternal

- Failure of the cervix to dilate.
- Torsion of the uterus
- Insufficient contractions to expel the calf

Fetal

- Abnormal presentation of the fetus
- Oversized Fetus – when the fetus is much bigger than the dam
- Fetal monsters

When to intervene

- Cow has been in the first stage of labour for more than 8 hrs.
- Cow has been in the second stage of labour for more than 2 hrs and there is very little progression.
- The fetal membranes and or fetal tissues are observed hanging out for more than 2hrs and delivery is incomplete.
- Fetal membranes are not passed out in 8hrs to 12hrs after delivery.

What to do

- Get a complete history.
- Use lubricant before examining the birth canal.
- Evaluate the size of the dilatation of the birth canal.
- Ascertain the vitality of the fetus.

d. Post – Partum Disorders

i. Retained placenta

Failure of expulsion of the placenta up to 12hrs after calving. This is common in cases of abortion, premature birth or in cases of hypocalcemia.

Management

- Manual removal of the placenta, preferably on the third day of calving. Then give an antibiotic preferably trimethoprim sulphur.
- Give hormones such as oxytocin, or prostaglandins

ii. Vaginal/ uterine prolapse

protrusion of the uterine mass through the vulva. This can be caused by too many attempts to extract the fetus or hypocalcemia.

Management

- Thoroughly clean the protrusion using water.
- Reduce the swelling by using either salt or sugar.
- Lubricate the mass and push it in.
- Stay sutures can be used to keep the uterus inside.

iii. Pyometra

This is the accumulation of pus in the uterus. In this case, the cow will fail to show heat signs. This condition is caused by invasion of bacteria into the uterus when there are:

- Retained fetal membranes
- Injuries in the calving canal
- Calving happened in a dirty environment
- Hormonal imbalances

Management

- Use chemical disinfectants when cleaning the uterus.
- Antibiotics eg trimethoprim sulphur, tetracyclines
- Hormonal therapy.