ROYAL GOVERNMENT OF BHUTAN
Ministry of Agriculture and Forests
Department of Livestock

NATIONAL ANIMAL HOSPITAL
THIMPHU: BHUTAN

Standard Treatment Guidelines

Compiled by:

National Animal Hospital

Thimphu

Foreword

Acknowledgement

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1 GENERAL SIGNS OF GOOD HEALTH IN ANIMALS

1.1 Appearance of the animal

The healthy animal is alert and aware of its surroundings. It should stand on all of its feet. For instance, bending of legs indicates rickets and emaciated body is suggestive of chronic diseases.

An animal or a bird that is dull/depressed/excited/ruffled feather/droopy or keeping aloof is suggestive of disease.

1.2 Movement (gait)

The healthy animal will walk easily and steadily with all of its feet taking its weight. Steps should be regular.

Lameness, stiffness, extension and flexion of limbs and speed of movement can be examined in relation with diseases of skeleton. Range of movement diminishes in arthritis and laminitis. Circling is commonly noticed in gid, listeriosis and ketosis.

Horses normally stand during the day. If you go near an animal that is lying down it should stand up quickly otherwise it has health problems.

1.3 Eyes

The eyes should be clear, bright and alert with no discharge at the corners.

1.4 Ears

The normal ears are clean with little or no odor and without any discharge. Most animals have erect ears which move in the direction of any sound.

1.5 Nose and Muzzle

In most of the animals, nose/muzzle/snout is normally moist and cool with no discharge.

1.6 Mouth

There should be no saliva dripping from the mouth. If chewing is slow or incomplete there must be a problem with the teeth. Lesions such as blisters and ulcers occur in FMD.

1.7 The coat

The hair coat of the animal will be smooth and shiny. In cattle presence of lick marks indicate good health. In febrile conditions hair may be erect and in all chronic disturbances in nutrition, hair becomes rough, lusterless dry and coarse. Alopecia (loss of hair) may occur due to diseases like ringworm, scabies etc but periodic shedding of hair should not be regarded as abnormal.

In poultry the feathers should be smooth and glossy and not ruffled. In pigs a curly tail is a sign of good health while a scaly skin points to health problems.

1.8 Behaviour

Diseased animals usually behave differently from healthy animals. Animals affected with abdominal pain frequently lie down & get up, kick & look at the flank and roll. Changes in the tone of bark, hyper-excitability or dumbness are suggestive of rabies.

1.9 Breathing

Breathing should be smooth and regular at rest. Respiratory movements can be observed at the right flank. Any change in the rate indicates respiratory involvement. Thoracic respiration is seen in animals suffering from acute peritonitis and abdominal respiration in pleurisy. Double expiratory movements are seen in emphysema in horses.

1.10 Defecation

Variation in quantity and quality of defecation is indicative of digestive disturbances of various origins such as infection, parasitism, nutritional imbalance and nervous manifestation. Diarrhea and constipation are commonly encountered symptoms.

1.11 Urination

The urine should be clear and the animal shows no signs of pain or difficulty in urinating. Horses, mules and donkeys can have thick yellow urine which is normal.

Frequent urination is related with painful conditions of urinary tract or estrus and dribbling of urine occurs as a result of paralysis or obstruction of urethra or its sphincter.

1.12 Appetite and Rumination

The animal should eat and drink normally. Failure to eat is an obvious sign of ill health. Absence of rumination is also indicative of disease in ruminants.

1.13 Milk Production

In the milking animal, a sudden change in the amount of milk produced can mean a health problem. Any sign of blood or other matter in the milk points to infection in the udder. There should be no swelling of the udder and no sign of pain when it is touched.

2 GENERAL EXAMINATION

2.1 Palpation

Palpate lympnodes and muscles for swelling or pain.

2.2 Auscultation

Listen for noisy breathing at mouth and nares without stethoscope, then auscultate using a stethoscope at least four different areas of the chest, including right and left ventral and right and left dorsal lung fields for any pain or abnormal sounds.

2.3 Recording Physiological Parameters

2.3.1 Body temperature in different species

We use a thermometer to measure the temperature of the body. The unit of measurement is either degrees centigrade (°C) or degree Fahrenheit (°F). We measure the body temperature of animals by placing a thermometer in the rectum.

Species	**Normal temperature (°F)**	**Critical point(°F)**	**Conversion to °C**
Cattle	101.5	103	C= (F-32)*5/9
Horses	100.5	102	
Sheep/Goats	101.5	104.5	
Pigs	102	103.5	
Poultry	107	109	
Dogs	100.6	102	
Cats	100	102.5	

2.3.2 Pulse rate in different species

Species	**Artery**	**Site**	**Normal Pulse rate**
Cattle	Coccygeal artery	On the underside of the base of tail	40-80 per min
Horse	External maxillary artery	On the inside of cheek	35-40 per min
Sheep & goat	Femoral artery	On the inside of the top of back leg	70-130 per min
Pigs	Femoral artery	On the inside of the top of back leg	60-90 per min

Dog	Femoral artery	On the inside of top of back leg	80-160 per min
Cat	Femoral artery	On the inside of top of back leg	110-200 per min

Remember that the pulse will be higher in the young and small sized animal. To take the pulse you should feel for it with the first two fingers of the hand.

2.3.3 Respiration rate in different species

Species	**Respiration rate (per min)**	**Species**	**Respiration rate (per min)**
Cattle	10-30	Sheep & goat	15-35
Pig	10-20	Horse	8-10
Dog	20-40	Cat	30-40

2.3.4 Assessment of severity of degree of dehydration

BW loss (%)	**Sunken eyes & shrunken face**	**Skin fold test (sec)**	**PCV (%)**	**Fluid requirements (ml/kg BW) to replace deficit)**
4-6	Not detectable	-	40-45	20-25
6-8	++	2-4	50	30-50
8-10	+++	6-10	55	50-80
10-12	++++	20-45	60	80-120
12-15	+++++	Prolonged period	<60	>120

3 GENERAL SYSTEMIC CONDITIONS

History Recording

History obtained from the owner is the foremost guiding instrument towards diagnosis of any disease. History recording maybe divided into present history and past history.

Present History

Record variations in following parameters from normal:

- ✓ Feed intake
- ✓ Water intake
- ✓ Respiration
- ✓ Defecation
- ✓ Urination
- ✓ Milk production
- ✓ Gait
- ✓ Posture
- ✓ Growth

Past History

History about previous ailments, specially related to present situation must be taken into consideration. In case the animal(s) has/have been previously affected with any disease, what was the cause? What kind of treatment was given to the animal? All these details must be recorded and history about management, nutrition and environment should also be obtained.

3.1 Fever

Fever is a syndrome characterized by rise in body temperature produced by foreign substance circulating in the blood.

Causes

- ✓ Infectious: Bacteria, virus, protozoa or fungi.
- ✓ Non-infectious: chemical fever, surgical fever and fever as a result of immune reactions.

Signs & symptoms

- ✓ Rise in body temperature (105^{o}F).
- ✓ Increase pulse rate & respiration rate.

- ✓ Anorexia.

Treatment

- ✓ Antibiotic, if the cause of fever is an infectious agent.
  Oxytetracycline LA: Cattle, Sheep and pigs @ 20mg/kg BW IM. Follow up antibiotic injection after 3-4 days if deemed necessary **OR** Oxytetracycline: Cattle, Sheep, Goat, Horse & Pigs @ 5-10mg/kg BW IM/IV once daily for 3-5days and Dog & cat @ 10-20mg/kg BW IM/IV once daily for 3-5days.
- ✓ Antipyretic/Anti-inflammatory
  Meloxicam: All species @ 0.2-0.4mg/kg BW IM/IV/SC **OR** Phenylbutazone: Cattle & Horses @ 1-3mg/kg BW IM/IV**OR** Meloxicam + Paracetamol bolus: Large ruminants @ 1-2boli twice daily Oral& Small ruminants @ ½ boli twice daily Oral.Treatment should continue for 2-3days or until the symptoms subside.
  Antipyretics should be used with caution because fever is a protective mechanism and lowering the body temperature may be detrimental in an animal with an infectious disease.

3.2 Hyperthermia

Hyperthermia is elevation of body temperature either due to excessive heat production/absorption or due to deficient heat loss.

Causes

- ✓ High environmental temperature.

Signs & symptoms

- ✓ Body temperature >105^{o}F.
- ✓ Increase in heart & respiration rate.
- ✓ Restless & increased salivation.

Treatment

- ✓ Intravenous infusion of cool fluids (Normal saline or RL or DNS)
  Large animals @ 500-1000ml & Small animals @ 100-500ml.
- ✓ Antipyretics
  Meloxicam: All species @ 0.2-0.4mg/kg BW IV **OR** Phenylbutazone: Cattle & Horses @ 1-3mg/kg BW IV.
- ✓ Application of ice packs.

3.3 Hypothermia

Hypothermia is decrease in body temperature below the critical level.

Causes

- ✓ Excessively cold temperature.

Signs & symptoms

- ✓ Body temperature <96^{o}F.
- ✓ Shivering.

Treatment

- ✓ Intravenous infusion of warm fluids (Normal saline or RL or DNS)
  Large animals @ 500-1000ml & Small animals @ 100-500ml.
- ✓ Drying of the body surface.
- ✓ Wrapping patients with blankets or hot water bags.

3.4 Pain

Pain can be defined as awareness or perception of a noxious stimulus that is potentially damaging to the tissue.

Causes

- ✓ Trauma.
- ✓ Swelling/inflammation.

Signs & symptoms

- ✓ Abnormality in posture/gait.
- ✓ Grunting/moaning.

Treatment

- ✓ Analgesics/anti-inflammatory
  Meloxicam: All species @ 0.2-0.4mg/kg BW IM/IV/SC **OR** Phenylbutazone: Dog @ 22mg/kg BW IV once daily, Cattle & Horses @ 1-3mg/kg BW IM/IV, Pig @ 4 mg/kg BW IV once daily and Sheep & Goat @ 5 mg/kg BW IV once daily **OR** Meloxicam +

Paracetamol bolus: Large ruminants @ 1-2boli twice daily Oral and Small ruminants @ ½ boli twice daily Oral.
Treatment should continue for 2-3days or until the symptoms subside.

3.5 Vomiting

Vomiting is forceful ejection of gastric contents and occasionally proximal small intestine contents through mouth. It is more common in dogs & cats than in other species. In horses vomiting is a terminal sign and is noticed in acute gastric dilation.

Causes (dogs & cats)

- ✓ Sudden change in diet.
- ✓ Ingestion of foreign material (garbage, plant leaves etc).
- ✓ Drug induced.
- ✓ Toxic substances.
- ✓ Metabolic disorders (diabetes, hepatic disease, renal disease).
- ✓ Gastritis and ulcer.
- ✓ Infectious cause (Parvovirus infection, parasitic infection).

Signs & symptoms

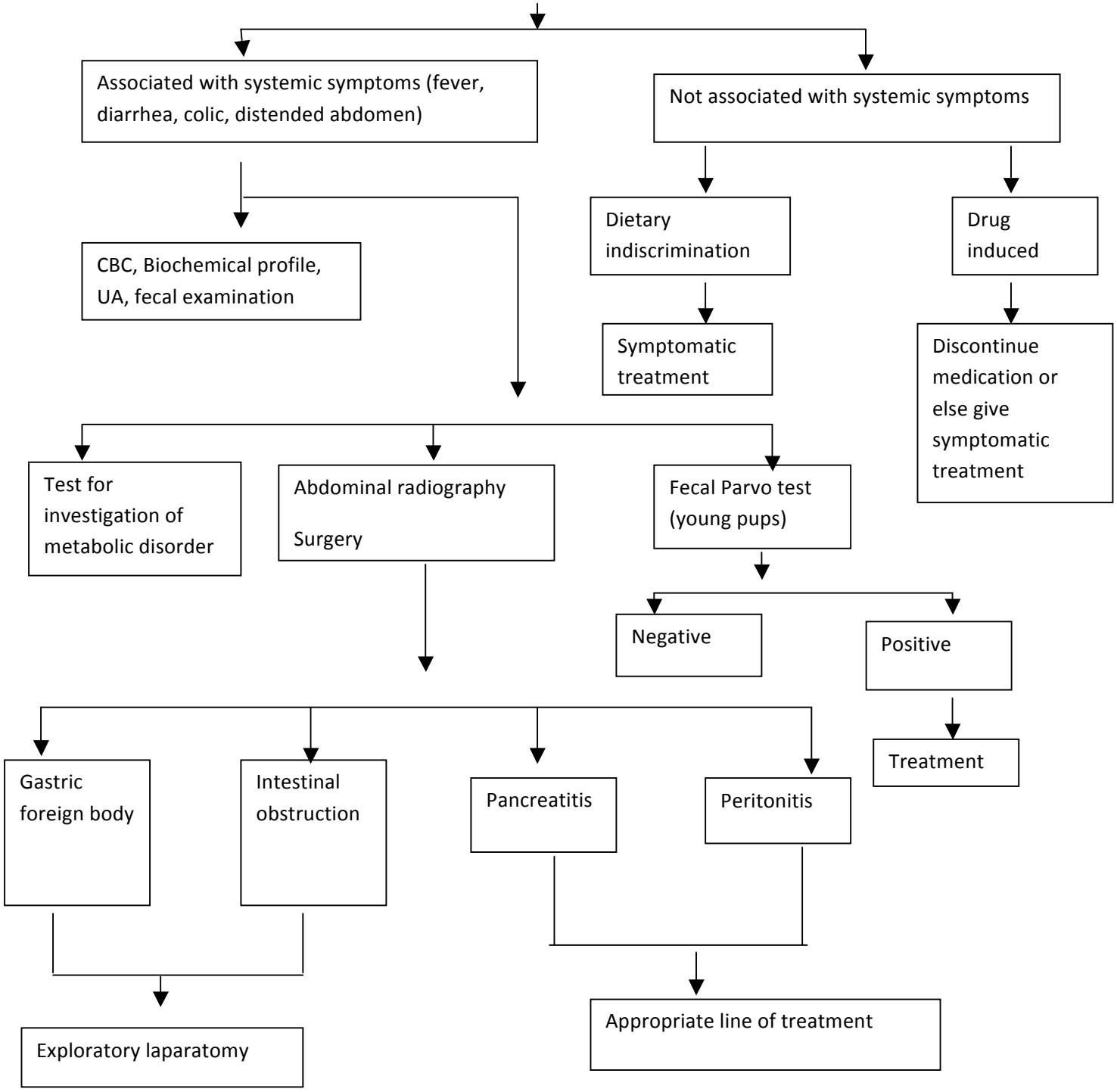
- ✓ Vomiting.

Treatment

- ✓ Remove the initiating cause.
- ✓ Antiemetics (Drugs to stop vomiting)
  Metoclopramide: Dog & Cat @ 0.2mg/kg BW once daily IM/IV/SC **OR** Ondansetron: Dog & Cat @ 0.5mg/kg BW IV **OR** Promethazine: Dogs @ 1.5 – 2.5mg/kg BW Oral/IM/IV.
  Use of antiemetics should be done judiciously since they mask the progression of life threatening disorders such as intestinal obstruction.
- ✓ Correction of fluid, electrolyte and acid-base imbalance.
  Ringers lactate **OR** Normal saline **OR** DNS solutions.

Algorithm for diagnosis of acute vomition (Text book of Clinical Veterinary Medicine, ICAR)

Acute Vomition



CBC: Complete Blood count

UA: Urinalysis

4 DISEASES OF DIGESTIVE SYSTEM

4.1 Stomatitis

It is the inflammation of oral mucosa.

Causes

- ✓ Physical cause

- Faulty drenching.
- Injury due to foreign material including spines, awns etc.
- Maleruption/malocclusion of teeth.
- Ingestion of moldy and rotten straw or hay.

- ✓ Chemical cause

- Irritant drugs e.g-chloral hydrate.
- Ingestion of disinfectants e.g-bleaching powder, phenol etc.
- Licking of counter irritants applied to skin.

- ✓ Infectious causes (Bacteria, Viruses & Mycotic agents)

Cattle:

- *Fusobacterium necrophorum.*
- Actinobacillosis (wooden tongue).
- Actinomycosis (lumpy jaw)FMD, Vesicular stomatitis.

Sheep & Goat:

- PPR(peste de petites ruminantes).
- Blue tongue.
- FMD.
- Sheep pox.

Horses:

- Vesicular stomatitis.
- *Actinobacillus* sp.

Pigs:

- Vesicular stomatitis.
- FMD.
- Swine vesicular disease.

Dogs:

- As a secondary disorder in CD, leptospirosis & uraemia.

Cats:

- Feline Panleukopenia virus, calci virus and herpes virus infections.

Signs & symptoms

- ✓ Presence of ulcers, vesicles, erosions, granulomas in oral mucosa.
- ✓ Secondary lesions like micro-abscesses.
- ✓ Swelling of face, throat or lymphnodes.
- ✓ Reduced feed intake or slow mastication, lip smacking.
- ✓ Salivation.
- ✓ Halitosis.
- ✓ Shrinking of tongue.

Treatment

- ✓ Cleaning of oral cavity with antiseptic solutions: 0.1-0.2% chlorhexidine **OR** 0.5-1% sodium bicarbonate **OR** sodium carbonate or sodium hydroxide **OR** 1:1,000 potassium permanganate **OR** 2% boric acid **OR** 2% alum.
- ✓ Application of mild antiseptic collutary: 2% suspension of copper sulphate solution **OR** 1% suspension of sulphonamide in glycerine.
- ✓ Administration of broad spectrum antibiotics
  Amoxicillin: Dog & Cat @ 10-20mg/kg BW twice daily oral for 1 week and Cattle, horse, goat and pig @ 10mg/kg BW twice daily oral for 1 week.
- ✓ Cauterization of long standing ulcers with silver nitrate stick or iodine tincture.
- ✓ Supportive treatment with IV fluids, soft palatable feed, anti-inflammatory drugs
  Meloxicam: All species @ 0.2-0.4mg/kg BW IM/IV/SC **OR** Meloxicam + Paracetamol bolus: Large ruminants @ 1-2boli twice daily Oral and Small ruminants @ ½ boli twice daily Oral.

4.2 Pharyngitis

It is the inflammation of pharynx.

Causes

- ✓ Physical causes.
- ✓ Faulty drenching.
- ✓ Ingestion of caustic or irritant substances or foreign bodies.
- ✓ Infectious causes as follows:

Cattle:

- Actinobacillosis.
- IBR (Infectious bovine rhinotrachitis).

Horse:

- Strangles.
- Anthrax.
- Equine influenza.

Pig:

- ✓ Anthrax.
- ✓ Aujeszky's disease etc.

Dogs:

- ✓ *Bordetella bronchiseptica* (kennel cough).

Signs & symptoms

- ✓ Evinces pain while swallowing and may cough up feed resulting in inappetence or anorexia.
- ✓ Throat may be swollen.
- ✓ Nasal discharge at times containing blood or feed.
- ✓ Painful cough.
- ✓ Nasal regurgitation.
- ✓ Stretching of neck.
- ✓ Drooling of saliva.
- ✓ Swelling of retropharyngeal and parotid lymph nodes.

- ✓ Protrusion of the tongue.

Treatment

- ✓ A soft palatable diet.
- ✓ Animals to be kept in a well ventilated, warm and clean premise.
- ✓ Pharyngitis of viral or bacterial origin should be treated with NSAIDs
  Phenylbutazone: Dog @ 22mg/kg BW IV once daily, Cattle & Horses @1-3mg/kg BW IM/IV, Pig @ 4 mg/kg BW Oral/IV and Sheep & Goat @ 5 mg/kg BW Oral/IV **OR** Meloxicam: All species @ 0.2-0.4mg/kg BW IM/IV/SC **OR** Meloxicam + Paracetamol bolus: Large ruminants @ 1-2boli twice daily Oral and Small ruminants: ½ boli twice daily Oral.
- ✓ Antibiotics
  Benzathine Penicillin: Cattle, Horse, Sheep, Goat, Swine @ 12000 IU/kg BW deep IM repeat after 2 days and Dog, Cat: 40000 IU/kg BW deep IM repeat after 2 days (Administer 3-5 doses) **OR** Strepto-penicillin: Large animal @ 2ml/50kg BW IM once daily for 3-5 days and Small animal @ 1ml/5kg BW IM once daily for 3-5days.
- ✓ A parentral fluid support in case the animals go off- feed.
  D5 or DNS: Large animals @ 50ml/kg/day and Small animals @ 60ml/kg/day IV.
- ✓ Vitamin A and C for better healing of mucosa.
- ✓ Inhalation of tincture benzoine to soften the viscid exudates.

4.3 Esophagitis

It is inflammation of esophagus.

Causes

- ✓ Ingestion of irritant, caustic and foreign body.
- ✓ Drenching of too hot or cold substances.
- ✓ Faulty insertion of stomach tube.

Signs & symptoms

- ✓ Drooling of saliva.
- ✓ Nasal regurgitation and coughing up feed.

Treatment

- ✓ Withhold feed for 2 days.
- ✓ Parentral administration of intravenous fluids.
  D5 or DNS: Large animals @ 50ml/kg/day and Small animals @ 60ml/kg/day IV.
- ✓ Dogs & Cats: Pantroprazole @ 0.7-1mg/ kg BW IM/IV to reduce gastric acidity and Metoclopramide @ 0.2mg/kg BW once daily IM/IV/SC for gastric emptying

- ✓ Antibiotics
  Gentamicin: All species @ 4mg/kg IM/IV twice daily for 3-5 days **OR** Strepto-penicillin/Benzathine penicillin: Cattle, Horse, Sheep, Goat, Swine @12000 IU/kg BW deep IM repeat after 2 days and Dog & Cat: 40000 IU/kg BW deep IM repeat after 2 days.
- ✓ Analgesics
  Phenylbutazone: Dog @ 22mg/kg BW IV once daily, Cattle & Horses @1-3mg/kg BW IM/IV, Pig @ 4 mg/kg BW Oral/IV and Sheep & Goat @ 5 mg/kg BW Oral/IV **OR** Meloxicam: All species @ 0.2-0.4mg/kg BW IM/IV/SC **OR** Meloxicam + Paracetamol bolus: Large ruminants @ 1-2boli twice daily Oral and Small ruminants: ½ boli twice daily Oral.

4.4 Choke

It refers to obstruction of esophagus by food masses and foreign bodies.

Causes

Cattle:

- ✓ Rapid ingestion of food material such as potato, apple, turnip etc.

Dogs & Cats:

- ✓ Ingestion of indigestible foreign material such as chicken bones, fish hooks etc.

Signs & symptoms

- ✓ Salivation and coughing.
- ✓ Restlessness and anxious.
- ✓ Swelling at the neck (except in horse).

Treatment

- ✓ Removal of foreign body with the help of forceps.
- ✓ Using stomach tube to push the obstructing object into the rumen.
- ✓ If these methods fail, surgical removal of foreign body is advised.

4.5 Simple Indigestion/Inappetence

Simple indigestion is a minor disturbance in ruminant GI function that occurs most commonly in cattle and rarely in sheep and goats.

Causes

- ✓ Ingestion of highly digestible feed in large quantity e.g grain.

- ✓ Ingestion of indigestible feed, moldy feed, frozen feed, industrial waste products, insufficient drinking water.
- ✓ Abrupt change in the quality or quantity of the diet.
- ✓ Prolonged treatment with sulfonamides or antibiotics.

Signs & symptoms

- ✓ Anorexia.
- ✓ Ruminal stasis.
- ✓ The feces are soft to watery and foul smelling.
- ✓ Absence or reduction in ruminal movement, moderate distension of rumen, rumen maybe be slight tympanic or doughy.

Treatment

- ✓ Drenching of less than 20lts of warm water or warm saline water and massage of rumen helps in restoring the rumen function **OR** Magnesium sulphate @ 0.5-1.0 kg in water as drench.
- ✓ Livertonic powder: Cattle & Horse @ 40-50gm twice daily for at least two days, foal, calf & pig @ 20-25 gm twice daily and Sheep & Goat @10-15 gm daily Oral **OR**
- ✓ Rumenotoric/stomachic powder: Cattle, Horse & Mule @ 40 to 60 g as a bolus or electuary twice daily, calf, colt, heifer and adult pig @ 20 to 30 g as a bolus or electuary twice daily and Sheep & Goat @ 10 to 15 g as a bolus or electuary twice daily **OR**
- ✓ Antimony Potassium Tartarate + $FeSO_4$ + $CoSO_4$ + CoCL: Sheep @ ½ to 1 bolus per day orally and Cattle and Buffaloes @ 3-4 boli per day orally.
- ✓ B complex: Large animals @ 5-10ml IM and Small animals @ 0.1 to 1ml IM.
- ✓ Parentral fluid such as D5 or DNS.
- ✓ Cud transfer (4-8L of rumenal fluid) in patients with history of prolonged anorexia and weakness.

4.6 Lactacidosis (Carbohydrate engorgement)

It is an acute disease of ruminants caused due to ingestion of highly fermentable carbohydrate rich food characterized by rumen hypomotility to atony, dehydration, acidemia, diarrhea, depression, incoordination, collapse, and in severe cases, death.

Causes

- ✓ Ingestion of large quantity of carbohydrate rich grains like wheat, rice, corn, barley and *torma.*
- ✓ Excessive feeding of jackfruit, turnip or potatoes.

Signs & symptoms

- ✓ Restlessness, kicking at the belly, frequent lying down & getting up.
- ✓ Enlarged rumen with abdominal pain.
- ✓ Sudden anorexia.
- ✓ Complete ruminal stasis.
- ✓ Animal becomes dull.
- ✓ Stumbling gait/in-coordination, muscle tremor, recumbency and death within 24-72hrs.
- ✓ Tachycardia and increased pulse rate.
- ✓ Death may occur in 24-72 hours.

Treatment

- ✓ In mild cases: Magnesium hydroxide @ 500g/450 kg BW in 10 liters boiled water orally.
- ✓ In moderate cases: Sodium bicarbonate (5%) @ 5litres for 450 kg animal during initial 30 mins, followed by 1.3% of sodium carbonate in saline may be given @ 60Lfor450kg IV.
- ✓ Parentral fluids like RL or DNS to correct dehydration.
- ✓ Antibiotic
  Procaine penicillin @ 22,000 IU/kg/ day IM.
- ✓ Dexamethasone: Cattle @10-30mg (total dose) IM/IV.
- ✓ Analgesic
  Meloxicam: All species @ 0.2-0.4mg/kg BW IM/IV/SC **OR** Meloxicam + Paracetamol bolus: Large ruminants @ 1-2boli twice daily Oral and Small ruminants: ½ boli twice daily Oral.
- ✓ Antihistamine
  Chlorpheniramine maleate Cattle @ 30-50 mg (total dose) IM.
- ✓ In severe cases: rumenotomy and cud transfer (10-20L of rumenal fluid).

Prevention

- ✓ Accidental access to concentrates for which cattle have developed an appetite, in quantities to which they are unaccustomed, should be avoided.
- ✓ Feedlot cattle should be introduced gradually to concentrate rations over a period of 2–3 weeks, beginning with a mixture of ≤50% concentrate in the milled feed containing roughage.

4.7 Bloat (Ruminal Tympany)

It refers to excessive accumulation of gas in rumen.It occurs due to excessive production of gas or obstruction of the process of eructation.

Frothy bloat (Primary): Persistent foam mixed with ruminal contents.

Causes

- ✓ Ingestion of excessive legume grass,grains etc.

Free Gas bloat (Secondary): Free gas separated from ingesta.

Causes

- ✓ Plant poisoning.
- ✓ Oesophageal obstruction.
- ✓ Hypocalcaemia.
- ✓ Tetanus.
- ✓ Anaphylaxis etc.

Signs & symptoms

- ✓ Distension of flank or entire abdomen mostly on left side.
- ✓ Frequent defecation of faeces & urination.
- ✓ Severe dyspnoea.
- ✓ Extension of head.
- ✓ Protrusion of tongue.
- ✓ Excessive salivation.
- ✓ Ruminal movements cease.
- ✓ Inappetence followed by anorexia.
- ✓ At times projectile vomiting.
- ✓ Frequent lying down and getting up.
- ✓ Kicking of belly.

Treatment

- ✓ In severe cases TROCARIZATION must be done or perform emergency rumenotomy.
- ✓ In mild cases, 16G needle can be used to relive the gas.
- ✓ Administer liquid paraffin (8-10 ml/kg)/castor oil/mineral oil or 150 -200 gm sodium bicarbonate in water orally **OR** Turpentine oil 20-30ml with linseed oil orally **OR** Formaline 5ml with 300 ml of water orally **OR** Silica in Dimethicone: Large Animal @ 100 - 200ml dilute with equal quantity of water and Small Animal @ 20 - 30ml dilute with equal quantity of water.
- ✓ Antibloat powder
  Cattle, Buffalo, Horse: 80 gm, calf, foal, and heifer: 40 gm and Pig, Sheep & Goat: 20-25 gm.
    - In Gaseous bloat – the dose to be suspended in 250ml of lukewarm water.
    - In Frothy bloat – the dose to be suspended in 250-500ml edible oil.

4.8 Traumatic Reticuloperitonitis (TRP)

Traumatic reticuloperitonitis, is a relatively common disease in adult cattle caused by the ingestion and migration of a foreign body in the reticulum. Cattle are more likely to ingest

foreign bodies than small ruminants since they do not use their lips for prehension and are more likely to eat a chopped feed.

Causes

- ✓ Occurs as a result of ingestion of sharp foreign bodies such as nails, needles, barbed wire etc.

Signs & symptoms

- ✓ Anorexia.
- ✓ Reluctant to move.
- ✓ Walk slowly.
- ✓ Arching of back.
- ✓ Infrequent urination and defecation.
- ✓ Mild fever.
- ✓ Elevated pulse rate.
- ✓ Shallow respiratory rate.
- ✓ No ruminal movements.
- ✓ No rumination and no eructation.
- ✓ On palpation of flank region the rumen feels doughy.
- ✓ Constipation.
- ✓ Brisket region oedema.
- ✓ Pole test: On pressure of xiphoid region with pole, the animal evinces pain.
- ✓ Reduction of milk yield by less than 33%.

Treatment

- ✓ Immobilisation of patient on an inclined plain with elevated fore quarter (avoids further penetration).
- ✓ Administration of systemic antibiotics
  Sulphadimidine @ 100mg/kg BW Oral/IV **OR** Penicillin @ 12000 IU/kg BW IM/SC.
- ✓ Immobilization of foreign body with magnets (bar magnet or magnet concealed inside gelatin).
- ✓ Rumenotomy and removal of foreign body.
- ✓ Analgesics
  Meloxicam: All species @ 0.2-0.4mg/kg BW IM/IV/SC **OR** Phenybutazone: Cattle @ 1-3mg/kg BW IM/IV.

4.9 Traumatic Pericarditis

Perforation of pericardial sac by sharp foreign body from the reticulum causing pericarditis.

Causes

- ✓ Perforation of pericardial sac by a sharp foreign body like nails, wires from the reticulum.

Signs & symptoms

- ✓ Anorexia.
- ✓ Diarrhoea.
- ✓ Teeth grinding and salivation.
- ✓ Posture of back is arched.
- ✓ Elbows abducted.
- ✓ Shallow respiration.
- ✓ Submandibular,brisket and ventral oedema.
- ✓ Conjuctival oedema.
- ✓ Fever.
- ✓ Tachycardia.

Treatment

- ✓ Administration of systemic antibiotics to prevent flaring of peritonitis or pleuritis with penicillin @ 22,000 IU/kg/day IM.
- ✓ Rumenotomy and removal of foreign body.
- ✓ Supportive fluid therapy.

4.10 Gastritis/abomasitis (Large animals)

It is inflammation of monogastric stomach/abomasum in ruminants. The condition is may not be prominent in large animals.

Causes

- ✓ Physical causes like overfeeding of inferior quality feed, ingestion of foreign objects, ingestion of poisonous plants and food allergy.
- ✓ Chemical causes like ingestion of irritant chemicals, fungal toxin and prolong use of steroids and phenybutazone.
- ✓ Infective causes like salmonellosis, Leptospirosis, foot and mouth disease, African swine fever, infectious canine hepatitis and various endoparasitic load.

Signs & symptoms

- ✓ In severe inflammation pigs, horses and ruminants vomit.
- ✓ Inappetence.
- ✓ Abdominal pain.

Treatment

- ✓ Withdrawal of food.

- ✓ Fluid therapy.
- ✓ Gastric sedatives e.g magnesium hydroxide or carbonate, kaolin, pectin, charcoal every 2-3 hours.
- ✓ Administer mineral oil to empty the alimentary tract.

4.11 Gastritis (Small animals)

It refers to inflammation of stomach.

Causes

- ✓ Viruses, bacteria and parasites.
- ✓ Ingestion of foreign material such as spoiled food, stones, plastic etc.

Signs & symptoms

- ✓ Persistent vomiting.
- ✓ Lethargy.

Treatment

- ✓ Dietary restriction-withdraw water for first 12 hours and food for first 24 hours.
- ✓ Antiemetics
  Metoclopramide: Dog & Cat @ 0.2mg/kg BW once daily IM/IV/SC **OR** Ondansetron: Dog & Cat @ 0.5mg/kg BW IV **OR** Promethazine: Dogs: @ 1.5-2.5mg/kg BW Oral/IM/IV.
- ✓ Antacids
  Ranitidine: Dog & Cat @ 1-2mg/kg BW Oral/IM/IV/SC twice daily **OR** Pantroprazole: Dog & Cat @ 0.7-1mg/kg BW IM/IV once daily **OR** Aluminium hydroxide @ 10-30mg/kg BW Oral three to four times a day.
- ✓ Parentral fluids like DNS, NS, RL if there are dehydration or electrolyte imbalances.
- ✓ Antibiotics are only advised if the cause is of infectious origin.
  Amoxicillin: Dog & Cat @10-20mg/kg BW twice daily oral for 5-7days **OR** OTC: Dog & Cat @ 10-20mg/kg BW once daily IM/IV for 3-5days.

4.12 Enteritis (Diarrhea)

It is inflammation of the intestinal mucus membrane and manifested by varying degree of diarrhea, dehydration, abdominal pain, bloat and anorexia.

Causes

- ✓ Ingestion of excessive amount of feed, mouldy feed or changes in diet.
- ✓ Bacteria: *Ecoli*, S*almonella*, *Clostridium perfingeneses* type E & C, *M*. *paratuberculosis*, *Proteus* sp.

- ✓ Virus: Bovine Viral dirrhoea, Bovine malignant catarrh, Canine Parvovirus, Distemper virus, Coronavirus, Hog cholera virus.
- ✓ Fungus:Candida sp, Protozoa: Eimeria sp, Helminth: Amphistomiasis, liver fluke, Ascarasis, toxocara etc.
- ✓ Chemical agents: poisoning of mercury, lead, copper, oxalates, iron etc. dietary deficiency of copper.

Signs & symptoms

- ✓ The major clinical findings are fever, diarrhoea, anorexia, dehydration, depression, and abdominal pain.
- ✓ The following type of faeces can be seen depending on the aetiological agents:
  1. Colibacillosis: Chalky white, watery or pasty.
  2. Johne's disease: Thick pea soup like without any mucosal shreds or mucus.
  3. Canine coronavirus: Awfully foul smelling.
  4. Canine parvovirus: Pancake-like faeces.
- ✓ In parasitic enteritis, diarrhoea is seen without fever. In amphistomiasis, faeces are watery and foul smelling. Hypoproteinemia and subcutaneous edema are seen in parasitic enteritis.

Treatment

- ✓ Primary cause (physical and chemical agents) of enteritis should be removed as far as practicable.
- ✓ Antidiarrhoeal powder
  Cattle & Horse @ 30 to 50 g orally, once or twice daily, Calf, Sheep, Colt, Pig @ 6 to 10 g orally, once or twice daily and Dog & Piglet @ 2 - 3 g orally, once or twice daily and in poultry 0.5 to 1% mixed with the feed.
- ✓ Loperamide: Dog & Cat @ 0.1mg/kg BW once/twice daily Oral.

The actual cause of diarrhoea should be detected before providing specific treatment.

- ✓ Parasitic enteritis: Use broad spectrum Anthelmintic drug.
  Albendazole: Cattle, Horse, Sheep, Goat & Pig (Nematode & Cestode) @ 5mg/kg BW Oral as single dose and Flukes @ 7.5 mg/kg BW Oral. Dog & Cat @ 25-50 mg/kg Oral for 3-5 days **OR** Fenbendazole: Cattle, Sheep, Goat, Horse & Pig @ 5-7.5mg/kg BW single dose Oral, Dog @ 50mg/kg BW for three days Oral, Cat @ 30mg/kg BW for three days Oral and Birds @ 10-15mg/kg Oral. In Dog & Cat: Praziquantel + Pyrantel pamoate + Febantel @1 tablet/10kg BW Oral.
- ✓ Bacterial enteritis: Antibiotics
  Sulfadimidine: Cattle, Sheep, Goat & Pigs @ 200mg/kg BW Oral/IV for 3-5days **OR** OTC-LA @ 5-10mg/kg BW IM (1-2 doses with interval of 3-4days).

For Dog & Cat: Metronidazole @ 10-15mg/kg twice daily Oral/IV for 5-7 days **OR** Amikacin @ 5-10mg/kg every 8hrs IM/IV/SC 5-7 days with Metronidazole **OR** Gentamicin @ 4mg/kg BW twice daily IM/IV with Metronidazole **OR** Metronidazole & Enrofloxacin @ 7mg/kg BW Oral once daily for 5-7days.

- ✓ Parental fluids DNS, Dextrose 5% or RL to correct dehydration & electrolyte imbalance. Large animals @ 50ml/kg BW IV and Small animals @ 60ml/kg BW IV.
- ✓ Vitamin B complex injection
  Large animals @ 5-10ml IM and Small animals @ 0.1-1ml IM.

4.13 Constipation

It is defined as infrequent or absence of passage of feces characterized by straining at defecation and by retention of hard feces in the colon and rectum.

Causes

- ✓ It is occurred due to reduced peristaltic movement of GIT (Gastrointestinal tract), reduced hepatic function, and peritonitis.
- ✓ Impaction of large intestine, and change of diet & weather.
- ✓ Chronic dehydration, ingestion of less fibrous feed and fodder, less water intake, chronic zinc poisoning and in terminal stage of pregnancy in cattle.

Signs & symptoms

- ✓ Repeated straining attempts for defecation but failure.
- ✓ Scanty hard dry faeces with mucus and blood strained.
- ✓ Abdominal pain arched back, loss of appetite, sunken eye, and rough body coat and becomes weak.
- ✓ Vomiting and nervous signs are seen in advance case.
- ✓ Per rectum exploration reveals the engorged hard mass which contains mucous. Animal may die due to toxemia.

Treatment

- ✓ Magnesium sulphate: Cattle @ 150-200g with water **OR** Liquid paraffin: Dog @ 4 - 30ml orally for 3 to 5 days, Pig @ 60 - 300ml orally for 3 to 5 days and Horse & cattle @ 750ml orally for 3 to 5 days.
- ✓ Bisacodyl (not in EVDL): Small Dog & Cat @ 5mg and larger dogs @ 10mg (total dose) oral.
- ✓ Rectal enema in pets.
- ✓ Vitamin B complex.
- ✓ Parentral fluids.
- ✓ Higly palatable fibrous feed and fodder are to be offered with plenty of drinking water.

4.14 Equine Colic

Equine colic is a condition of severe abdominal discomfort characterized by pawing, rolling and sometimes the inability to defecate.

Causes

- ✓ Gastric impaction.
- ✓ Intestinal obstruction.
- ✓ Ascarid infection.
- ✓ Massive strongyle infection.
- ✓ Rupture of stomach or intestine.

Signs & symptoms

- ✓ Restlessness.
- ✓ Pawing or stamping, kicking at the belly.
- ✓ Lying down & getting up, lying on the back, groaning & sweating.

Treatment

- ✓ NSAIDS
  Flunixin meglumine @ 1.1mg/kg BW IV **OR** Phenylbutazone @ 1-3mg/kg BW IV/IM
- ✓ If colic is due to impaction of GI tract, administer mineral oil.

Prevention & control

- ✓ Good management practices especially regular dental care, provide clean feed and drinking water and regular deworming.

4.15 Ascites

It is accumulation of non-inflammatory fluid in the peritoneal cavity characterized by bilateral distension of lower abdomen.

Cause

- ✓ Increase in hydrostatic pressure in capillaries (Cardiac insufficiency, CHF & passive congestion).
- ✓ Fall in osmotic pressure of blood.
- ✓ Obstruction of lymphatic vessels or
- ✓ Damage to capillary walls.
- ✓ Hypoproteinemia.

Signs & symptoms

- ✓ Symmetrical bilateral distension of lower abdomen.

Treatment

- ✓ Hypoproteinemia associated with parasitic infection should be treated with broad spectrum anthelmintic in addition to giving protein rich diet.
- ✓ Diuretic
  Frusemide: Small animals @ 0.5-2ml & Large animals @ 5-10ml once daily for 2-5days.
- ✓ Removal of fluid by puncturing the abdomen using 16G needle & 10-20ml syringe. The fluid should never be drained completely at a time since it may produce shock.
- ✓ Broad spectrum antibiotics may be given to prevent bacterial contamination of peritoneum.

4.16 Jaundice

Jaundice is also referred to as icterus, and is an important clinical manifestation to liver diseases and biliary system. It is characterized by deposition of bilirubin leading to yellow coloration of plasma, visible mucus membranes and other tissues.

Causes

It can be of three types

1. Hemolytic/pre-hepatic jaundice (causes):
   Haemoprotozoan (Anaplasmosis, babesiosis), leptospirosis, bacillary hemoglobinuria and infectious anemia.
   Viral infections
   Chronic copper poisoning, selenium toxicity and excessive ingestion of brassica plants or berseem.

2. Hepatocellular/intrahepatic jaundice (causes):
   Infectious & toxic agents
   Deficiency of vitamin E or selenium

3. Obstructive/post-hepatic jaundice (causes):
   Biliary calculi and infection with nematodes or trematodes.

Signs & symptoms

- ✓ Yellowish discoloration of mucus membranes and skin.
- ✓ Urine becomes dark colored.
- ✓ Anorexia, anaemia, muscular weakness and mental depression.

Treatment

- ✓ The primary cause of the disease should be treated.

- ✓ Dietary management helps in early recovery of the case. Affected animals should be given highly palatable and laxative diet containing excessive carbohydrates and rich in calcium salts. The diet should have minimum amount of fats.
- ✓ Vitamin B complex

Large animals @ 5-10ml and Small animals @ 1-2ml IM for 4-6 days.

- ✓ Livertonic powder

Cattle & Horse @ 40-50gm twice daily for at least two days, Foal, calf & pig @ 20-25 gm twice daily and Sheep & goat @10-15 gm daily Oral.

5 DISEASE OF RESPIRATORY SYSTEM

5.1 Rhinitis

It is inflammation of nasal mucosa.

Causes

Predisposing factors

- ✓ Exposure of animals to cold and humid weather.
- ✓ Housing of animals in ill ventilated shed.
- ✓ Inhalation of dust, smoke and other factory fumes.
- ✓ Sudden change in the environmental temperature(from too hot to too cold)
- ✓ Stress and strain.

Exciting factors

- ✓ Viral infection like canine distemper, infectious bovine rhino tracheitis,sheep pox and atrophic rhinitis.
- ✓ Bacteria like *Streptococcus, Staphylococcus,Spherophorus necrophorus*.
- ✓ Fungus like *Aspergillus, Mucor and Rhizopus.*
- ✓ Parasites like *Schistosoma nasalis and Oestrus ovis.*

Signs & symptoms

- ✓ Nasal discharge, may vary from serous, mucoid,muco purulent and it may also be hemorrhagic or caseous.
- ✓ Discharge may be copious or scanty.
- ✓ Elevation of body temperature.
- ✓ General malaise and sneezing is evident.
- ✓ Enlarged submaxillary lymphnodes.

Treatment

- ✓ Nasal irrigation with Normal saline.
- ✓ Antibiotics
  Streptopenicillin: Large animals @ 2ml/50kg BW& Small animals @ 1ml/5kg BW for 3-5days **OR** Oxytetracycline (OTC): Cattle, Sheep, Goat & Horse @ 5-10mg/kg BW/day IM/IV for 3-5days and Dog and Cat @ 10-20mg/kg BW IM/IV for 7-10 days.
- ✓ Antihistamines
- ✓ Chorpheniramine maleate: Cattle @ 30-50 mg (total dose) IM, Dog @ 0.2 -0.4 mg/kg BW BID Oral/IM/SC and Cat @ 2 mg/cat twice daily Oral/IM/SC.
- ✓ Medicated inhalation (nebulizer): Tincture benzoin, tincture camphor are used in hot water.

5.2 Cough

It is a sudden noisy expulsion of air from the lungs that clears the air passages. It is a common symptom of upper respiratory infection or bronchitis or pneumonia.

Causes

- ✓ Respiratory tract infections
- ✓ Worm infestation

Treatment

- ✓ Anticough powder: Cattle and horse @ 30 to 40g orally once or twice daily, in calf, Sheep, Colt and Pig @ 6 to 12g orally once or twice daily and Dog and piglet @ 2 to 4g orally once or twice daily.
- ✓ Cough syrups for Dog & Cat @ 2-5ml twice daily Oral.
- ✓ Antihistamines
  Chlorpheniramine maleate: Cattle @ 30-50mg (total dose) IM, Dog @ 0.2 -0.4mg/kg BW twice daily Oral/IM and Cat @ 2mg/cat twice daily Oral/IM.
- ✓ Anthelmintics (if the cause is parasitic in origin)
  Fenbendazole: Cattle, Sheep, Goat, Horse & Pig @ 5-7.5mg/kg BW single dose Oral, Dog @ 50mg/kg BW for three days Oral and Cat @ 30mg/kg BW for three days Oral.
- ✓ Antibiotics (if the cause is infectious in origin)
  Streptopenicillin: Large animals @ 2ml/50kg BW& Small animals @ 1ml/5kg BW for 3-5days **OR** Oxytetracycline (OTC): Cattle, Sheep, Goat & Horse @ 5-10mg/kg BW IM/IV, Dog & Cat @ 10-20mg/kg BW IM/IV for 3-5 days.

5.3 Pneumonia

Pneumonia is inflammation of lungs.

Causes

- ✓ Expose animals to damp place & cold environment.
- ✓ Housing in an ill ventilated room.
- ✓ Long transport by ship or train/truck.
- ✓ Severe hunger & malnutrition.
- ✓ Sudden changes in the weather condition.
- ✓ Physical agents- inhalation of dust, irritating vapours etc.
- ✓ Bacterial & viral agents, parasitic & fungal agents:
  Bacterial agents like *Corynebacterium pyogenes*, *Klebsiella pneumonia*, *Mycoplasma mycoides, Stretococcus equi, Pseudomonas spp, Haemophilus suis, Paateurella multocida, Bordetella bronchiseptica*.

Viral agents like Equine infectious pleuropneumonia, Adenovirus, sheep pox, Canine distemper, Infectious canine hepatitis virus.
Fungal agents like *Aspergillus fumigate, Histoplasma spp, Cryptococcus neoformans*.
Parasitic agents like *Dictyocaulus viviparous, Toxoplasma gondii, Ancylostoma caninum, Toxocara canis.*

Signs & symptoms

- ✓ In Bacterial pneumonia: Rapid shallow respiration, rise in body temp, anorexia, dullness, loss of body condition, moist, painful & progressive cough, nasal discharges; serous/mucoid/purrulent. On auscultation vesicular murmur is heard, dry rales in chronic cases.
- ✓ In viral Pneumonia: Dry unproductive cough, nasal discharges, off feed, dehydration & emaciation. On auscultation increased vesicular murmur & increased bronchial tone.
- ✓ In parasitic pneumonia: Cough becomes more frequent gradually and distressing, serous/mucoid nasal discharges, diarrhoea, temperature remain in normal range.Auscultation reveals moist & crepitant rales.
- ✓ Mycotic pneumonia:Short moist cough, thick mucoid nasal discharges, haemorrhages nasal discharges, dehydration & anaemia. On auscultation harsh respiratory sounds.
- ✓ Aspiration pneumonia: History of faulty drenching, nasal discharges with thick mucoid purulent, animals reluctant to lie down, evidence of pain on palpation and percussion, protrusion of tongue and mouth, and on auscultation reveals typical moist(bubbling) rales &occasional splashing sound.

Treatment

- ✓ Bacterial pneumonia: Antibiotics
  Penicillin @ 12000-50000IU/kg BW IM **OR** Streptopenicillin: Large animals @ 2ml/50kg BW& Small animals @ 1ml/5kg BW for 3-5days **OR** Oxytetracycline (OTC): Cattle, Sheep, Goat& Horse @ 5-10mg/kg BW IM/IV **OR** Amoxicillin: Dogs @ 20-25mg/kg BW & Cats @ 10-20mg/kg BW two to three times a day Oral **OR** Enrofloxacin: Dog & Cat @ 2.5-5mg/kg BW divided doses Oral/IM/IV. Antibiotic therapy should continue for at least 1 week after the clinical signs have resolved.
- ✓ In Parasitic pneumonia
  Fenbendazole: Cattle, Sheep, Goat, Horse & Pig @ 5-7.5mg/kg BW single dose Oral, Dog @ 50mg/kg BW for three days Oral and Cat @ 30mg/kg BW for three days Oral.
- ✓ In Fungal Pneumonia: Griseofulvin: Cattle @ 7.5-10mg/kg BW/day for 30 days, Dog & Cat @ 20mg/ kg BW for 30 days, Pig @ 20 mg/kg Oral once daily for 6 weeks and Horse @ 10 mg/kg Oral (in feed) daily for 7 days.
- ✓ Antihistamines
  Chorpheniramine maleate: Cattle @ 30-50 mg (total dose) IM, Dog @ 0.2 -0.4 mg/kg BW twice daily Oral/IM and Cat @ 2 mg/cat Oral/IM.

- ✓ Anticough powder: Cattle and Horse @ 30 to 40g orally once or twice daily, in calf, sheep, colt and pig @ 6 to 12g orally once or twice daily and Dog & piglet @ 2 to 4g orally once or twice daily.

5.4 Epistaxis (Nasal bleeding)

It is bleeding from the nostrils.

Causes

- ✓ Mechanical injury.
- ✓ Foreign body.
- ✓ Trauma.
- ✓ Granulomatous growth or nasal polyps or ulceration of mucous membrane.
- ✓ Clotting disorders (thrombocytopenia, coagulation defect).

Treatment

- ✓ Specific causes should be corrected.
- ✓ Haemostatics
  Adrenochrome: Large animals @ 20-25mg (total dose) IM and Small animals @ 5-10 mg (total dose) IM **OR** Ethamsylate: Large animals @ 500 mg four times a day IM/IV, Dog & Cat @ 250 mg four times a day IM/IV **OR** Botorphase: All animals @ 1 ml IM 12 hourly **OR** Vitamin K: Horse & cattle @ 0.5-2.5mg/kg BW twice daily IM/SC, Dog & Cat @0.25-2.5mg/kg BW IM/SC.
- ✓ Application of ice pack on the head in dogs & cats.

5.5 Chronic Obstructive Pulmonary Disease (COPD)

COPD, also known as "Heaves" or Recurrent Airway Obstruction, is a common condition affecting horses, ponies and donkeys of most breeds and ages, and occurs mainly in the winter.

It is an allergic disease of the lung, causing the small airways to constrict making it harder for the horse to breathe. As a result, the horse may breathe faster or deeper than usual, and it may cough. Many cases are very mild, and the signs may only be noticeable when the horse is exercised, but some cases can be very severe, causing permanent damage to the lungs (known as broken wind).

Causes

- ✓ There are many substances that a horse can be allergic to, the most common being the fungal spores found on hay or straw, hence why COPD is usually seen when horses are stabled in the winter. Dusty stables, barns and arenas, or even dusty shavings, can also be implicated.

Signs & symptoms

- ✓ Increased breathlessness.
- ✓ Frequent coughing.
- ✓ Wheezing with mucopurulent nasal discharge.
- ✓ Tightness in the chest.

Treatment

- ✓ Mucolytics.
- ✓ Glucocorticoids like Prednisolone @ 4 mg/kg IM every 48 hours for 3-5 days.
- ✓ Anticough powder @ 30 to 40g orally once or twice daily.
- ✓ Anthelmintics (if the cause is parasitic in origin)
  Fenbendazole @ 5-7.5mg/kg BW single dose Oral,
- ✓ Antibiotics (if the cause is infectious in origin)
  Streptopenicillin: Large animals @ 2ml/50kg BW **OR** Oxytetracycline (OTC) @ 5-10mg/kg BW IM/IV.

Prevention

- ✓ Affected animals should be kept in dust or dirt free and well ventilated space, dusty feeds and water should be avoided.
- ✓ Adequate comfortable bedding, easily digestible diet and fresh water should be provided.

6 DISEASE OF CARDIOVASCULAR SYSTEM

6.1 Heart Failure

It refers to failure of heart to pump blood effectively to tissues. It can be either acute heart failure or congestive heart failure.

Acute Heart Failure

Causes

- ✓ Defect in filling, failure of heart to pump blood due to severe tachycardia/bradycardia.
- ✓ Ingestion of certain poisonous plants.

Signs & symptoms

- ✓ Dysnoea, staggering, falling and death within a few minutes of the first appearance of signs.
- ✓ Acute heart failure is often considered as the cause of death in many horses that die suddenly during training or racing.

Treatment

- ✓ It is impractical to treat acute heart failure due to very short duration of disease.

Congestive Heart Failure (CHF)

Causes

- ✓ Any defect of the pericardium, myocardium or endocardium which interferes with the blood flow.

Signs & symptoms

- ✓ Right side CHF: deep respiration, listlessness, depression, staggering gait, exercise intolerance, increased heart rate, ascites, hydrothorax and hydropericardium.
- ✓ Left side CHF: increase in rate & depth of respiration, coughing & prominent moist crackles at the base of lungs.

Treatment

- ✓ Cardiac Glycoside
  Digoxin (*for dosage refer table in the next page*)

Species	Total dose	Administration schedule	Daily maintenance dose
Dog(orally)	0.11-0.22mg/kg	0.022-0.044mg/kg 12 hourly for 48 hrs	0.011mg/kg 12 hourly
dog(parentally)	0.022-0.044mg/kg	3 divded doses over 24 hrs	Oral digoxin 0.011 mg/kg q 12 hrs

- ✓ Diuretics (Oedema):
  Frusemide: Cattle & Horse @ 1-2mg/kg BW once or twice daily IM/IV, Dog & Cat @ 2-4mg/kg BW once or twice daily IM/IV and Pig @ 5mg/kg BW once or twice daily IM/IV.

6.2 Hemorrhage/Bleeding

It refers to escape of all blood constituents from blood vessels or vascular system.

Causes

- ✓ Trauma.
- ✓ Infectious agents.
- ✓ Toxins.

Signs & symptoms

- ✓ Weak.
- ✓ Anaemic.

Treatment

- ✓ For external bleeding, apply tourniquet or pressure bandage at the site along with local haemostat adrenaline.
- ✓ Hemostats.
- ✓ Parentral fluid therapy (DNS, RL) 40-50ml/kg BW IV.
- ✓ **Blood transfusion: Blood can be collected from another animal of same species. For the first transfusion, cross-matching of donor & recipient blood is not necessary but it should be done during subsequent transfusion.**

6.3 Anemia

Anemia is defined as reduction in the amount of haemoglobin per unit of blood.

Causes

- ✓ Severe wound injury, epistaxis, surgical bleeding.
- ✓ Brackern fern and warfarin poisoning.
- ✓ Endoparasitic infection or heavy ectoparasite infection.
- ✓ Deficiency of Vitamin K and C and prothrombin.
- ✓ Leptospirosis, babesiosis, anaplasmosis.
- ✓ Deficiency of minerals like copper, cobalt, iron and choline.

Signs & symptoms

- ✓ Muscular weakness, dullness pale mucosa inappetence and get exhausted easily.
- ✓ Tachycardia (increased heart rate).

Treatment

- ✓ Nonpatent hematinic mixture (till the primary cause is not identified): Haematinic for adult cattle as follows: Ferric sulphate - 80g Cupric sulphate - 20g Cobalt sulphate - 2g Mix and give 1/10th of above daily as electuary.
- ✓ For vitamin and mineral deficiency, supplement with B complex and liver extract for cattle, buffalo and horses @4-5ml twice weekly and for dogs and cats @ 0.25-0.5 ml IM twice weekly. As a mineral supplement CoFeCu @ 1 tab for 20 days orally.
- ✓ *Iron deficiency:* Supplement with Iron dextran.
  Cattle and Horse @ 5-10ml weekly, piglets @ 150mg (3ml) at 3 days old and repeated after 3 weeks age with 100mg and Dogs @ 1-2 ml (22mg) weekly (do not excess more than 3 shots).

Treat the primary cause of the disease.

- ✓ *Endoparasites*
  Deworm the animals.
  Albendazole: Horses & Cattle @ 5-10 mg/kg BW, Dogs @15mg/kg BW **OR** Piperazine: Dogs @ 0.2 ml/10kg BW **OR** Praziquantel 5mg/kg BW (1Tab/10kg orally) **OR** Praziquantel+pyrantel pomoate+febantel combination @ 1 tab/10 kg BW.
- ✓ *Ectoparasite :* spray the animal with 1% deltamethrin/cypermethrin or amitraz.
- ✓ For hemoprotozoa infection like babesiosis or anaplasmosis, treat the animal with Diaminizine aceturate @ 0.8-1.6mg/100kg BW **OR** with Oxytretracycline @ 5 mg/kg BW.

6.4 Oedema

It is excessive accumulation of fluid in tissue spaces.

Causes

- ✓ Chronic congestive heart failure, hypoproteinemia, endotoxemia and obstruction to lymph flow.
- ✓ Liver & kidney disease

Signs & symptoms

- ✓ Swelling is soft, painless and pit on pressure,
- ✓ Distribution of oedema varies with animal species.

Treatment

- ✓ Treatment of oedema should be aimed at correcting the cause.
- ✓ Chronic congestive heart failure can be treated with digoxin.
- ✓ Hypoproteinemia can be treated by administrating appropriate anthelmintic and vitamin & mineral supplement.
- ✓ Diuretics administration
  Frusemide: Cattle & Horse @1-2mg/kg BW, Dog & Cat @ 2-4mg/kg BW and Pig @ 5 mg/kg BW Oral/IM.
- ✓ Ascites: Aspiration of fluid and frusemide administration.
- ✓ Aminoacids infusions.

7 URO-GENITAL SYSTEM

7.1 Urinary Tract Infection (UTI)

Urinary Tract Infection refers to infection of urinary system-kidneys, ureters, bladder and urethra.

Causes

- ✓ Bacterial infection: *E coli, Corynebacterium renale* in cattle &*Eubacterium suis* in swine.
- ✓ Trauma to bladder along with urine stagnation,

Signs & symptoms

- ✓ Pain during urination.
- ✓ Frequent urination.
- ✓ Attempting to urinate but producing only small quantities of urine.
- ✓ Blood in urine.

Treatment

- ✓ Antibiotic
  Trimethoprim-sulfamethoxazole: Cattle @ 25mg/kg BW Oral/IM/IV, Horse @ 22mg/kg BW IV, @ 30mg/kg BW Oral and Dog & Cat @ 15mg/kg BW twice daily oral **OR** OTC-LA: Large animals @ 5-10mg/kg BW IM. Repeat one dose after 3-4 days **OR** Amoxicillin: All species @ 10mg/kg BW Oral twice daily for 7-14 days **OR** Enrofloxacin: Dogs @ 20mg/kg BW Oral/IM for 3days.
- ✓ Parentral fluid therapy should be provided so that physical flushing of bladder occurs frequently.
- ✓ Anti-inflammatory drugs
  Meloxicam: All species @ 0.2-0.4mg/kg BW IM/IV/SC **OR** Phenylbutazone: Dog @ 22mg/kg BW IV once daily, Cattle & Horses @ 1-3mg/kg BW IM/IV, Pig @ 4 mg/kg BW Oral/IV and Sheep & Goat @ 5 mg/kg BW Oral/IV.

7.2 Urinary Incontinence in dogs

It is involuntary passing of urine.

Causes

- ✓ UTI (Cystitis).
- ✓ Weak bladder sphincter (common in aging female dogs).
- ✓ Excessive water consumption due to diabetes &kidney disease.
- ✓ Urinary stones.
- ✓ Spinal disease.
- ✓ Congenital.

Signs & symptoms

- ✓ Dripping urine with or without pain.

Treatment

- ✓ UTI: Refer treatment for UTI.
- ✓ Supportive treatment: Vitamin B complex (Neurotonics) @ 0.5-1ml once daily for few weeks.
- ✓ Urinary stones (calculi): Cystotomy (The surgical removal of stones within the bladder is referred to as cystotomy, meaning an opening of the bladder)
  Treat urinary tract infection; use diet to dissolve stones unless there is an obstruction; surgical removal if there is an obstruction.

7.3 Hematuria

It refers to presence of blood in the urine.

Causes:

- ✓ Glomerulonephritis, cystitis, urolithiasis and bladder neoplasms.
- ✓ Bracken fern poisoning.

Signs & symptoms

- ✓ Urine stained with blood.
- ✓ On sedimentation the RBC will settle down where as in hemoglonuria there won't be separation between the RBC and other components.
- ✓ Inappetence.

Treatment

- ✓ Rule out the cause.
- ✓ Hexamine 4-8gm and sodium acid phosphate 30g or boric acid 15g. Sodium acid phosphate or boric acid is to be given 4 hours before the administration of hexamine. Hexamine has no action in alkaline urine, so Sodium acid phosphate is added to acidify the urine of Herbivores.
- ✓ Supportive treatment: B complex injection @ 8-10 ml /cattle IM.
- ✓ Vitamin and amino acids: 5-10mg/animal/ day for 1-2 weeks.
- ✓ Hemostat:
  Adenochrome: Large animals @ 20-25mg (total dose) IM, Small animals @ 5-10 mg (total dose) IM **OR** Etamsylate: Cattle, Dog & Cat @ 250-500mg four times a day IM/IV **OR** Hemocoagulase (Botropase): Dog @ 0.5-1ml IM/IV (total dose).

7.4 Hemoglobinuria

Hemoglobinuria is defined as excretion of hemoglobin in the urine.

Causes

- ✓ Bacillary hemoglobinuria- *Clostridium hemolyticum.*
- ✓ Hemaprotozoan infections- Babesiosis.
- ✓ Metabolic disease (post parturient hemoglobinuria).
- ✓ Snake bite (hemotoxic).

Signs & symptoms

- ✓ Passing of coffee coloured urine.
- ✓ On sedimentation the RBC will settle down in hematuria where as in hemoglonuria there won't be separation between the RBC and other components.

Treatment

- ✓ Blood Protozoan: Diamenazine aceturate @ 8-16mg/kg BW IM.
- ✓ Bacillary hemoglobinuria: Penicillin @ 20000-40000 IU/kg BW IM **OR** OTC-LA @ 5-10mg/kg BW IM.
- ✓ Supportive therapy.

7.5 Metritis & Endometritis

Metritis is inflammation of uterus and Endometritis is inflammation of the endometrial lining of the uterus and it is usually due to an infection.

Causes

- ✓ Bacterial infection: *Corynebacterium, Streptococcous, Staphylococcous, E coli.*
- ✓ Trauma during dystokia.
- ✓ Mechanical injury during AI.

Signs & symptoms

- ✓ Depressed & anorectic.
- ✓ Fever.
- ✓ Vaginal discharge (mucupurulent/serosanguineous with foul smell).
- ✓ Vomiting in small animals.

Treatment

- ✓ Antibiotic
  OTC: Cattle, Sheep, Goat & Horse @ 5-10mg/kg BW IM/IV for 3-5days and Dog & Cat @ 10-20mg/kg BW/day IM/IV for 5 days **OR** OTC-LA: Large animals @ 5-10mg/kg

BW IM. Repeat after 3-4 days **OR** Ceftriaxone and Tazobactum: Large animal @ 5-10mg/kg BW IM/IV/SC & Small animals @ 15-25mg/kg BW IM/IV/SC.

- ✓ Large animal & small animal: Infuse Povidone iodine @ 5-10 ml into each uterine horn (it is not recommended in acute metritis and purpura metritis).
- ✓ For evacuation of uterine contents PGF2a @ 0.25mg/kg BW SC twice daily for 2-3days **OR** Oxytocin @ 75-100 IU.

7.6 Orchitis

It is inflammation of testes.

Causes

- ✓ Traumatic injury.
- ✓ Bacterial (Brucella), fungal and viral infections.
- ✓ Excessive licking in dogs.

Signs & symptoms

- ✓ Pain & swelling of the scrotum.

Treatment

- ✓ Analgesics/anti-inflammatory
  Meloxicam: All species @ 0.2-0.4mg/kg BW IM/IV/SC **OR** Phenylbutazone: Dog @ 22mg/kg BW IV once daily, Cattle & Horses @ 1-3mg/kg BW IM/IV, Pig @ 4 mg/kg BW Oral/IV and Sheep & Goat @ 5 mg/kg BW Oral/IV **OR** Meloxicam + Paracetamol bolus: Large ruminants @ 1-2boli twice daily Oral and Small ruminants @ ½ boli twice daily Oral.
- ✓ Antihistamines
  Chlorphiniramine maleate: Cattle @ 30-50 mg (total dose) IM, Dog @ 0.2 -0.4 mg/kg BW twice daily Oral/IM/SC and Cat @ 2 mg/Cat.
- ✓ Hot fomentation (A cloth imbibed with hot water is locally applied around the inflamed area).
- ✓ Antibiotic (Infectious cause)
  StreptoPenicillin: Dog @ 40000 IU/kg IM for 7-10 days **OR** OTC-LA in large animals @ 5-10mg/kg BW IM **OR** Cephalexin: Large animals @7mg/kg PO daily for 5 days **OR** Gentamicin: Dog @ 4mg/kg every twice daily IM/IV for 7-10days.

7.7 Anoestrus condition

It refers to animal not coming in heat.

Causes

- ✓ Abnormalities of reproductive endocrine control.
- ✓ Nutritional imbalance and poor management.
- ✓ Pregnancy.
- ✓ Ovarian inactivity.
- ✓ Failure to observe heat signs.
- ✓ Ovulation that is not accompanied by signs of oestrus (silent heat).
- ✓ Cystic ovarian disease (luteal cyst).

Signs & symptoms

- ✓ Heat signs not seen since the time of calving.
- ✓ On rectal examination the ovaries will be smooth, flat and inactive.

Treatment

- ✓ Proper nutrition.
- ✓ Proper management.
- ✓ Micro nutrient supplementation.
- ✓ Reduction of stress to the animal.
- ✓ Hormonal treatment (Gnrh) Buserelin @ 5ml IM and oestrus synchronisation after examination.
- ✓ Treatment for luteal cyst: Prostaglandin PGF2a @ 2ml IM/SC, 1.3ml IV.

7.8 Repeat Breeder

A repeat breeder is a cow that is cycling normally, with no clinical abnormalities, but has failed to conceive after at least two successive inseminations.

Causes

- ✓ Early embryonic death
- ✓ Failure fertilization

Signs & symptoms

- ✓ Animal come into heat again and again.

Treatment

- ✓ Follow Proper timing of insemination & proper technique. (Thumb rule: if the cow comes to heat in the evening it should be inseminated in the next morning and if the cow comes to heat in the morning it should be inseminated in the evening or 8-12 hrs after the onset signs of heat)
- ✓ Advocate hormonal therapy: Busereline @ 5-15ml IM (depending on the condition of follicular cyst).

- ✓ Prostaglandins PGF2a @ 2-5ml IM/SC.

7.9 Pyometra

Pyometra is characterized by progressive accumulation of pus or mucupurulent matter in the uterus and by the persistence of functional luteal tissue in the ovary.

Causes

- ✓ Uterine infection.
- ✓ Abortion.
- ✓ ROP.

Signs & symptoms

In Cattle:

- ✓ Presence of intermittent vaginal discharge. The pus is usually thick mucoid and creamy, and yellow, white, or greenish-gray in color.
- ✓ In cow, on rectal palpation the uterine horns will be enlarged and distended.
- ✓ Absence of cyclical activity.

In Dogs & cats pyometra can be open or closed.

- ✓ Lethargy, depression, pyrexia, anorexia, vomiting, diarrhea, polydipsia, and polyuria
- ✓ A serosanguineous to mucopurulent vaginal discharge can be seen if the cervix is open.
- ✓ Vaginal discharge may be the only clinical finding in some patients.
- ✓ In patients with closed-cervix pyometra, vaginal discharge may not be present. Dogs with closed-cervix pyometra are often more seriously ill at the time of diagnosis than those with open-cervix pyometra.

Treatment

In Cattle:

- ✓ Advocate hormonal therapy: Natural prostaglandin PGF2 alpha @ 5ml IM **OR**
- ✓ Insert intrauterine with normal saline and 2% povidone iodine for 5-7 days **OR**
- ✓ Insert intrauterine urea and antibiotic bolus once a day for 5 days **and/OR**
- ✓ Parentral treatment with broad spectrum antibiotic if the infection is systemic. Oxytetracycline (SA) @ 11mg/kg IM/IV **OR** Oxy tetracycline @ 20mg/kg IM. Repeat one dose after 3-4 days.

In Dogs & cats:

- ✓ Ovariohysterectomy (surgical removal of uterus with ovaries) is the procedure of choice for the treatment of pyometra.

- ✓ Hormonal therapy in open pyometra: Natural prostaglandin PGF2 alpha 0.2mg/kg BW IM.
- ✓ Parentral treatment with broad spectrum antibiotic if the infection is systemic. Oxytetracycline (SA) @ 11mg/kg IM/IV **OR** Gentamicin @ 4mg/kg BW IM/IV for 5-7days.

7.10 Pseudopregnancy in dogs

Pseudopregnancy/False pregnancy/Pseudocyesis is a common condition where in a non-pregnant female dog exhibits signs of pregnancy, lactation or nursing.

Cause

- ✓ It occurs when progesterone levels, which rise after ovulation, begin to fall. Decreasing progesterone leads to an increase of the hormone prolactin. Prolactin is responsible for most of the behaviours seen during pseudopregnancy episode.

Signs & symptoms

- ✓ Dogs may exhibit mothering of toys, nesting, or even aggression.
- ✓ Mammary development and milk production.

Treatment

- ✓ Once a dog is showing signs of pseudopregnancy, reducing the stimulation for the behaviours may reduce their duration. Removing toys and stopping self nursing behaviour by placing e-collars may be helpful.
- ✓ Most cases do not require medical treatment and resolve with time. This may take a few weeks.
- ✓ Diuretic
  Frusemide @ 2-4mg/kg BW twice daily IM for few days to reduce fluid retention and stop lactation.
- ✓ Prolactin-suppresing drugs such as dopamine agonists
  Cabergolin @ 0.005mg/kg BW for 4-6 days oral **OR** Bromocriptine @ 0.01mg/kg BW twice daily for 10 days Oral.
- ✓ Ovariohysterectomy of dogs which are not used for breeding.

7.11 Retention of Placenta (ROP)

Retention of placenta or retained placenta usually is defined as failure to expel fetal membranes within 24 hr after parturition.

Causes

- ✓ Failure of normal process of expulsion of fetal membranes.

- ✓ Premature and twin birth.
- ✓ Abortion and placentitis.
- ✓ Uterine inertia due to hormonal imbalances and hypcalcemia.
- ✓ Hereditary predisposition.

Signs & symptoms

- ✓ Foetal membranes hanging from vagina.
- ✓ Slight inappetence.
- ✓ Cows that fail to expel fetal membranes within 36 hrs or so are likely to retain for 7-10 days as uterine contraction ceases after 36 hrs after birth of the calf.

Treatment

- ✓ Administer 40IU of Oxytocin & manual removal after 20 mins **OR** Manual removal of fetal membrane is if the temperature is normal
- ✓ Place urea and antibiotic boli 2 in each uterine horn.
- ✓ Broad spectrum antibiotic for 5 days in case of systemic infection.
  Oxytetracycline (SA): Cattle @ 11mg/kg IV/IM, Dog & Cat @10mg/kg IV initial dose, 7.5 mg/kg as maintenance twice daily **OR** Oxytetracycline (LA): Cattle @ 20mg/kg IM. Repeat one dose after 3-4 days **OR** Ampicillin & cloxacillin: All species @ 4-10mg/kg body weight IM/IV twice daily for 3 days.
- ✓ Uterine tonic (Utrosafe powder): Cows @ 50-60g, Mares @ 30-40g, Sheep & goat @ 8-12g Oral.
- ✓ Antihistamine
  Cattle @ 30-50 mg Total dose IM/SC.
- ✓ Analgesics
  Meloxicam: All species @ 0.2-0.4mg/kg BW IM/IV/SC.

7.12 Mummification and Macerated fetus

Mummification is a condition wherein fetal fluid and soft tissue is reabsorbed leaving just a mass of bone and skin tightly enclosed by the contracted uterine wall and Maceration is a sterile necrosis and dissolution of the fetus in utero.

Causes (No definite known causes)

- ✓ Genetic factor.
- ✓ Recessive genes.
- ✓ Torsion of umbilical cord.

Signs and symptoms

- ✓ No external symptoms.

- ✓ This could occur at any time of gestation more commonly from 3rd month of gestation. However, this condition is not diagnosed until the end of gestation period as the owner thinks that the animal is pregnant.
- ✓ This condition can only be diagnosed by per rectal examination.

Treatment

- ✓ Manual removal or Surgery after confirmation.
- ✓ Natural prostaglandin: PGF2 alpha 5 ml IM.
- ✓ Broad spectrum antibiotics to control secondary infection.
  Streptopenicillin @ 2.5g/animal IM for 5-7days.

7.13 Mastitis

It refers to inflammation of mammary gland.

Causes

- ✓ Bacteria: *Staphyloccocus, Streptococcus, E coli, Corynebacterium..*
- ✓ Virus: IBR, BVD, FMD
- ✓ Fungi and yeast: *Trichophyton, Aspergilllus, Candida.*

Signs & symptoms

- ✓ Swelling of udder. Udder becomes hard & fibrous.
- ✓ Animal exhibits signs of pain on palpation of udder.
- ✓ The secretions can be watery and blood tinged initially, but later on, it may be yellowish and pus like.

Treatment

- ✓ To overcome the aetiological agent, antibacterial agent should be given both parenterally and intramammarily.
- ✓ Streptococcal and staphylococcal mastitis: Intramammary infusion- Pendistrin-SH (Procaine Penicillin100,000IU Streptomycin sulphate 100mg, sulphamerazine 500mg, hydrocortisone acetate 20mg) one tube every quarter 12 hourly 1 to 3 instillations **OR** Vetclox plus (Cloxacillin 200mg and Ampicillin 75mg) 12 hourly in each affected quarter for 1 to 6 instillations AND Parentral Antibiotic: Streptopenicillin @ 2.5g/animal IM for 5-7days.
- ✓ Coliform mastitis: Oxytetracycline @ 10mg/kg IM/IV once daily for a week **OR** Cephalexin @ 5-10mg/kg Oral twice daily for 5 days **OR** Gentamicin @ 4mg/kg BW IM/IV for 5 days.
- ✓ Analgesics/anti-inflammatory

Meloxicam: All species @ 0.2-0.4mg/kg BW IM/IV/SC **OR** Phenylbutazone: Dog @ 22mg/kg BW IV once daily, Cattle & Horses @ 1-3mg/kg BW IM/IV, Pig @ 4 mg/kg BW Oral/IV and Sheep & Goat @ 5 mg/kg BW Oral/IV **OR** Meloxicam + Paracetamol bolus: Large ruminants @ 1-2boli twice daily Oral and Small ruminants @ ½ boli twice daily Oral.

Prevention & control

- ✓ Good hygienic measures. Cows and barn should be kept clean and all excretions disposed off properly.
- ✓ Regular application of disinfectant solution in barn.
- ✓ Dry cow therapy.

7.14 Hemogalactia

It refers to passing of blood or blood clots in milk.

Cause

- ✓ Trauma/injury to udder.
- ✓ Acute or peracute mastitis.

Signs & symptoms

- ✓ Blood or blood clots in milk.

Treatment

- ✓ Calcium borogluconate @ 150-250ml/cow IV/SC (this will help in clotting).
- ✓ Hemostat: Adenochrome @ 10ml/cow IM for 3 days.
- ✓ Acute & peracute mastitis: Refer treatment for mastitis.

7.15 Udder Oedema

It is swelling of udder and is commonly seen in high yielding cows just few days before parturition or immediately after parturition.

Cause

- ✓ Physiological.
- ✓ Mastitis.

Signs & symptoms

- ✓ Excessive fluid accumulation in the interstitial spaces of udder and subcutaneous tissue surrounding the udder.

Treatment

- ✓ Diuretics
  Acetazolamide @ 500-1,500mg/cow twice daily orally for 3 days **OR** Frusemide @ 500mg IV once a day or 250mg twice a day for 3 days.
- ✓ Magnesium sulphate glycerine at 1:1 ratio may be applied as hygroscopic (to reduce oedema) substance paste may be applied to udder for withdrawal of fluid.
- ✓ Analgesics
  Meloxicam: All species @ 0.2-0.4mg/kg BW IM/IV/SC.
- ✓ Cold fomentation using ice packs.
- ✓ Warm salt water fomentation if drugs are not available.

7.16 Hypogalactia and Agalactia

Hypogalactia refers to reduction in milk production and agalactia refers to absence of milk production.

Cause

- ✓ Stress

Treatment

- ✓ Chlorpromazine @ 250mg/cow twice daily orally, 1-2 hours before milking for 5-7days. This drug brings about psychological balancing effect and makes the animal calm and quiet so that oxytocin and prolactin are released to let down of milk **OR**
- ✓ Oxytocin @ 10-20 IU to let down of milk **OR** Metaclopramide @ 10ml/cow IM for 3 days. It brings about sedative effect and stimulates release of prolactin.
- ✓ Vitamin and mineral mixture.

7.17 Transmissible venereal tumour (TVT) in dogs

A transmissible venereal tumor, or TVT, is a naturally occurring tumor that is sexually transmitted from one dog to another. TVT is usually seen in young, intact (non-neutered) dogs.

Causes

- ✓ Cancerous cell

Signs and symptoms

- ✓ Friable multilobulated tumour single or multiple mass can be seen in external genital of bitch and penis of the dog.

Treatment

- ✓ Vincristine sulphate @ 0.025mg/kg weekly interval for 4 weeks only IV **OR** Methotrexate @ 0.3-0.8mg/kg weekly interval for 4 weeks only IV.
- ✓ Surgical intervention may be tried if possible.
- ✓ Avoid breeding of such animals.

8 DISEASE OF NERVIOUS SYSTEM

8.1 Paralysis

Paraplegia- paralysis of hind quarter.

Quadriplegia- all four legs are affected.

Diplegia-both sides of the body are affected.

Hemiplegia- loss of function affecting one side of the body only along with anterior or posterior part of the limb of that particular side.

Causes

- ✓ Toxic & metabolic diseases of nervous system like tick poisoning, snake bite, tetanus and hypomagnesemic tetany, focal inflammatory, neoplastic and traumatic lesions in the motor pathway.
- ✓ Mechanical injury/fall on blunt objects affecting nerves/loss of function of nerves.

Treatment

- ✓ Nursing is very much essential to alleviate the paralytic condition
- ✓ Animal should be given complete rest
- ✓ Recumbent animal should be placed on bedding made of straw, sacs or blankets.
- ✓ Fluid and electrolytes should be given through parental route
- ✓ Frequent turning of animal is required otherwise there is possibility of bed sore as well as other complication like hypostatic congestion of lungs
- ✓ Massage of affected part with liniment
- ✓ Injection Vitamin containing B1, B6 & B12 (Neuroxin/Neurobion): Large animal @ 5-10ml IM and Small animal @ 2-3ml IM with Prednisolone @0.5mg/kg BW for few weeks.
- ✓ Electrical stimulation therapy (laser & ultrsonography)
- ✓ Tick paralysis: Ivermectin @ 0.2mg/kg BW SC.

8.2 Epilepsy (Seizure/fits)

Epilepsy is a condition of the brain causing seizure and a seizure is disruption of the electrical communication between the neurons. It is common in dogs and cats but rare in large animals.

Causes

Intracranial causes:

- ✓ Head injury, congenital malformation of the brain, inflammation of meninges, brain tumor.

Extracranial causes

- ✓ Toxins, Metabolic diseases (hypoglycaemia, liver disease, kidney disease hypocalemia, electrolyte disturbances).

Signs & symptoms

- ✓ Excessive salivation.
- ✓ Collapsing, jerking, loss of consciousness.
- ✓ Limbs become tonic and extended rigidly.
- ✓ The seizure last 1-2mins.

Treatment

- ✓ Anticonvulsants
  Phenobarbitone (drug of choice for epilepsy): Dog & Cat @ 2.2 – 6.6mg/kg BW twice daily oral for 1-2weeks **OR** Diazepam: Dogs & Cats @ 0.5-1mg/kg BW Oral/IM/IV **OR** Phenytoin: Dogs @ 8-17mg/kg BW three to four times daily Oral for 1-2 weeks.

9 MUSCULO SKELETAL SYSTEM

9.1 Lameness

Lameness is an abnormal gait or stance of an animal that is result of dysfunction of the locomotor system.

Causes

- ✓ Laminitis, foot rot, dislocation, patellar luxation, joint-ill, fractures, etc.
- ✓ Muscle strain and sprain.

Signs & symptoms

- ✓ Pain.
- ✓ Lameness.

Treatment

- ✓ Analgesics/anti-inflammatory
  Meloxicam: All species @ 0.2-0.4mg/kg BW IM/IV/SC **OR** Phenylbutazone: Dog @ 22mg/kg BW IV once daily, Cattle & Horses @ 1-3mg/kg BW IM/IV, Pig @ 4 mg/kg BW Oral/IV and Sheep & Goat @ 5 mg/kg BW Oral/IV **OR** Meloxicam + Paracetamol bolus: Large ruminants @ 1-2boli twice daily Oral & Small ruminants @ ½ boli twice daily Oral. Treatment should continue for 2-3days or until the symptoms subside.
- ✓ Apply and massage turpentine liniments over the affected area **OR**
- ✓ Advise for hot fomentation **OR**
- ✓ Foot bath can be advised: 5% copper or zinc sulphate solution or with 3-5 % formalin can be used in case of interdigital dermatitis and foot rot.
- ✓ Antibiotics if cause is infectious.

9.2 Rickets

It is a defective mineralization or calcification of bones before epiphyseal closure in immature mammals.

Causes

- ✓ Deficiency of calcium, phosphorus or vitamin D or combinations of any the above.
- ✓ Disease of the young animals.

Signs & symptoms

- ✓ Stunted growth, bowed leg, enlargement of limb joints (especially forelimb).

Treatment

- ✓ Supplementation of "Ca" by oral feeding. Dog & cat @ 20-100mg/kg BW oral for few weeks.
- ✓ Vitamin D therapy: Dogs @ 7000-14000 IU, Cattle, horse &pig @ 15000-30000IU on alternate days for 1 week **OR**
- ✓ Supplement deficient diet with calcium, phosphorus or vitamin D.

9.3 Arthritis

It is inflammation of the joint.

Causes

- ✓ Trauma.
- ✓ Bacterial infection-staphylococci, streptococci and coliform infections.
- ✓ Immune mediated arthritis.

Signs & symptoms

- ✓ Pain, joints are thickened, swollen and hot.
- ✓ Lameness.
- ✓ Crepitation sound on movement of the joint.

Treatment

- ✓ Analgesics/anti-inflammatory
  Meloxicam: All species @ 0.2-0.4mg/kg BW IM/IV/SC **OR** Phenylbutazone: Dog @ 22mg/kg BW IV once daily, Cattle & Horses @ 1-3mg/kg BW IM/IV, Pig @ 4 mg/kg BW Oral/IV and Sheep & Goat @ 5 mg/kg BW Oral/IV **OR** Meloxicam + Paracetamol bolus: Large ruminants @ 1-2boli twice daily Oral and Small ruminants @ ½ boli twice daily Oral **OR**
- ✓ Steroids:
  Dexamethazone: Cattle & horse @ 10-30mg IM/IV & 2-10mg Intra-articular (total dose), Dog @ 0.5-2mg IM/IV, Cat @ 0.25-0.5mg IM/IV
  Dog & cat @ 0.25-2mg Oral & 0.25-5mg Intra-articular (total dose).
- ✓ Apply and massage turpentine liniments over the affected area.
- ✓ Cold and hot water fomentation can be applied.
- ✓ Antibiotic if cause is infectious
  Amoxicillin @ 10-20mg/kg BW Oral/IM twice daily for 5 days **OR** Enrofloxacin @ 2.5-5mg/kg BW Oral in divided dose daily for 7days.

10 DISEASE OF SKIN

10.1 Dermatitis

It is inflammation of skin.

Cause

- ✓ Physical injury in the form of trauma, laceration or abrasion.
- ✓ Irritant chemicals.
- ✓ Bacterial, fungal, viral and parasitic infections.
- ✓ Allergy.
- ✓ Endocrinal disease: hypothyroidism in dogs.
- ✓ Nutritional deficiency: fatty acids, vitamin A, E & B complex and zinc.

Signs & symptoms

- ✓ Alopecia (hair fall), pruritic (itching).
- ✓ Keratinisation (thickening of skin).
- ✓ Foul odour.
- ✓ Exudation.
- ✓ Reddening of skin (contact dermatitis).

Treatment

- ✓ Bacterial dermatitis
  Streptopenicillin: Cattle, Horse, Sheep & Goat, Pig @ 120000 IU/kg BW IM 3-5days, Dog & Cat @ 40000 IU/kg BW for 7-14 days **OR** Cephalexin: Dogs @ 20-40mg Oral two to three times a day for 7-14 days **OR** Amoxicillin: All species @ 10mg/kg BW twice daily Oral 7-14 days.
- ✓ Fungal dermatitis
  Griseofulvin: Cattle @ 7.5-10mg/kg BW for 30 days, Dog & Cat: 20mg/ kg BW for 30 days, Pig @ 20 mg/kg Oral once daily for 6 weeks and Horse @ 10 mg/kg Oral (in feed) daily for 7 days.
- ✓ Parasitic dermatitis
  Ivermectin: All species @ 0.2mg/kg BW SC.
- ✓ Topical application:
  Amitraz

Animals	**Ticks**	**Mites & lice**
Cattle Sheep & Goats Pigs	2ml/L of water 2ml/L of water 4ml/L of water	2ml/L of water 4ml/L of water 4ml/L of water

Deltamethrin: To be used as dip or spray. Against ticks: 2ml/litre of water. Mites: 4ml/litre of water. Lice: 1ml/liter of water. Flies: 2ml/liter of water. For curative purposes, 2 treatments at 12 to 15 days interval are necessary.

- ✓ Allergic dermatitis
  Prednisolone: Dog & Cat @ 1 to 3 ml IM (Total dose),
  Dog @ 0.5 mg/kg BW twice daily Oral for 5-10 days and Cat @ 2.5-5mg Oral twice daily.
- ✓ Antihistamine
  Chlorpheniramine: Dog & Cat @ 0.2-0.4mg/kg BW twice daily Oral/IM/SC for 5-7days.
- ✓ Advice use of medicated shampoos in pet animals.
- ✓ Vitamin & mineral supplement in diet.
- ✓ Advice not to use human shampoos or soaps.
- ✓ Avoid daily bath (once after two weeks).

10.2 Pyotraumatic Dermatitis (acute moist dermatitis, hot spots)

Pyotraumatic dermatitis is an acute and rapidly developing surface bacterial skin infection that occur secondary to self inflicted trauma.

Causes

- ✓ It is bacterial skin infection that occurs secondary to self inflicted trauma.

Signs & symptoms

- ✓ Erythemia, alopecia and weepy eroded skin with well demarcated margins.

Treatment

- ✓ Identify the underlying cause.
- ✓ The lesion should be clipped and cleaned with Normal saline and Povidone iodine.
- ✓ Antipruritic
  Prednisolone @ 0.5-1mg/kg BW Oral/IM once daily for 5-10 days.
- ✓ If the lesion is surrounded by papules or pustules antibiotic.
  Amoxicillin @10mg/kg BW twice daily Oral **OR** Enrofloxacin @ 4mg/kg BW for 3 to 4 weeks Oral/IM.

10.3 Pyoderma in dogs

Pyoderma is a bacterial infection of skin.

Causes

- ✓ *Staphylococcus, Streptococcus, Pseudomonas.*

Signs & symptoms

- ✓ Alopecia, erosions, ulcers or crusts.
- ✓ Pain and pruritis.

Treatment

- ✓ Antibiotics
  Amoxicillin @ 10mg/kg BW Oral/IM twice daily for 3-4weeks **OR** Trimethoprim/sulfadiazine @ 22-30mg/kg BW twice daily.
- ✓ Continue antibiotic for 1 week beyond complete clinical & cytological resolution.
- ✓ Concurrent bathing with every 2-7days with an antibacterial shampoo that contain chlorhexidine or benzyl peroxide.
- ✓ If the lesions recur within 7 days of antibiotic discontinuation, the duration of therapy was inadequate and the antibiotic s should be reinstituted for a longer period of time.
- ✓ Antipruritic/antihistamine
  Chorlpheniramine @ 0.2-0.4mg/kg BW Oral/IM/SC for 5-7 days.

10.4 Abscess

Abscess is a collection of pus that has built up within the tissue of the body.

Causes

- ✓ Bacterial infection.

Signs & symptoms

- ✓ Localized, often painful swelling or abscess with a crusted over puncture wound from which a purulent material may drain.

Treatment

- ✓ The abscess should be clipped, lanced and cleaned with 0.025%chlorhexidine.
- ✓ Antibiotics
  Amoxicillin 10mg/kg BW twice daily Oral for 7-10 days or lesions completely heals **OR** Streptopenicillin OR Ampicillin-Cloxacillin @ 10mg/kg BW IM/IV.

10.5 Malasseziasis

Malesseziasis is a skin disease caused by yeast characterized by alopecia, excoriations, erythemia and seborrhea.

Causes

- ✓ *Malassezia pachydematitis*

Signs & symptoms

- ✓ Moderate to severe pruritis.
- ✓ Generalized alopecia & seborrhoea.

Treatment

- ✓ Antifungal shampoo.
- ✓ Ketoconazole @ 10mg/kg BW Oral once daily for 4 weeks.

10.6 Demodectic Mange

It is a skin disease caused by Demodex mites. It affects pigs, canines, bovines and equines.

Cause

- ✓ *Demodex sps*

Signs & symptoms

- ✓ Alopecia, hyperpigmentation and scaling.

Treatment

- ✓ Ivermectin: All species @ 0.2mg/kg BW SC 3-5 shots on weekly interval.
- ✓ Antihistamine
  Chlorpheniramine: Cattle @ 30-50mg (total dose) Oral/IM/SC and Dog @ 0.2-0.4mg/kg BW twice daily Oral/IM/SC for 3-5days.
- ✓ Topical shampoos for dogs and cats.
- ✓ Deltamethrin or Cypermethrin @ 1ml/1L of water **OR** Deltamethrin: To be used as dip or spray. Against ticks: 2ml/litre of water. Mites: 4ml/litre of water. Lice: 1ml/litre of water. Flies: 2ml/litre of water. For curative purposes, 2 treatments at 12 to 15 days interval are necessary.
- ✓ Amitraz (refer treatment for dermatitis).

10.7 Sarcoptic Mange

It is a skin disease caused by Sarcoptes mites. It affects all domestic animals.

Cause

- ✓ *Sarcoptes scabiei*

Signs & symptoms

- ✓ Scale or crust formation and alopecia.
- ✓ Pruritis

- ✓ Thickened and wrinkled skin.

Treatment

- ✓ Ivermectin: All species @ 0.2mg/kg BW SC 3-5 shots on weekly interval.
- ✓ Benzylbenzoite lotion for local application for a week.
- ✓ Antihistamine
  Chlorpheniramine: Cattle @ 30-50mg (total dose) Oral/IM/SC and Dog @ 0.2-0.4mg/kg BW twice daily Oral/IM/SC for 3-5days.
- ✓ Topical shampoos for dogs and cats.
- ✓ Deltamethrin or Cypermethrin @ 1ml/1L of water **OR** Deltamethrin:To be used as dip or spray. Against ticks: 2ml/litre of water. Mites: 4ml/litre of water. Lice: 1ml/liter of water. Flies: 2ml/liter of water. For curative purposes, 2 treatments at 12 to 15 days interval are necessary.
- ✓ Amitraz (refer treatment for dermatitis).

10.8 Flea bite Dermatitis

It is an allergic reaction dogs and cats may have to flea bites marked by skin inflammation, hair loss and itching. It is common in dogs and cats and most prevalent during summer.

Cause

- ✓ Ctenocehalides canis (dogs) &C felis (cats).

Signs & symptoms

- ✓ Symptoms usually seasonal.
- ✓ Prurtic, popular, crusting eruptions.

Treatment

- ✓ Topical Medicated shampoo specific to ectoparasites. Bathe twice a week.
- ✓ Prednisolone @ 0.25-1mg/kg BW Oral/IM once or twice daily for 3-7 days.
- ✓ Flea drops for topical application.

10.9 Dermatophytosis (Ringworm)

It is the infection of hair shafts and stratum corneum caused by keratinophilic fungi.

Causes

- ✓ *Epidermophyton, Microsporum and Trichophyton*.

Sign and symptoms

- ✓ Cattle: Scattered, discrete and circular lesions and hair loss. The lesions occur most frequently on the head, neck, flanks, rump and limbs.
- ✓ Horse: Dry raised scaling lesions on saddle, neck, girth areas and hind quarters.
- ✓ Pigs: Erythematous patches or plaques on the back of ears, dorsolateral neck and back.
- ✓ Dogs & cats: Circular, irregular or diffuse alopecia with variable scaling lesions. Head is the most common site of infection and signs include hair loss around the nose, eyes and ears.
- ✓ Sheep & goats: The lesions are seen on head and neck.
- ✓ Fowl: White crusts on the comb and wattle.

Treatment

- ✓ Topical treatments
  Treatment with 0.5% sodium hypochlorite **OR** 1% Povidone iodine **OR** Whitfield's ointment (it is 3%salicylic acid and 6% benzoic acid in a suitable base such as Vaseline)
- ✓ Individual lesions should be treated with miconazole or clotrimazole ointments.
- ✓ Topical antifungal shampoos for dogs and cats.
- ✓ Systemic antifungals
  Griseofulvin: Cattle, Horse & Sheep @ 7.5-10mg/kg BW Oral for 30 days, Dog & Cat @ 20mg/ kg BW Oral for 30 days and Pig @ 20 mg/kg Oral once daily for 6 weeks **OR** Ketoconazole: Dog @10mg/kg BW Oral every 24hrs with food for 3-4weeks.

10.10 Dermatophilosis

It is bacterial infection of the epidermis affecting horses, cattle, sheep and goats.

Cause

- ✓ *Dermatophilus congolensis*

Signs & symptoms

- ✓ Hair matted together as a paint brush lesion.
- ✓ Crust/scab formation (coin shaped skin lesion).
- ✓ Accumulation of cutaneous keratinized material forming wart like lesions.

Treatment

- ✓ OTC LA: Cattle @20mg/kg BW IM. Repeat another dose after 2-3 days.
- ✓ Topical antibacterial Shampoo or topical treatment with povidone iodine.

10.11 Cattle Grub/Warble/Hypodermosis

It refers to infestation with warble flies.

Cause

- ✓ Larvae stages of the flies *Hypoderma sp.*

Signs & symptoms

- ✓ Penetration of newly hatched larvae may produce hypodermal rash.
- ✓ Carcasses or hides infested by the flies will have small slit to a hole of 3-4 mm in diameter.

Treatment

- ✓ Ivermectin @ 0.2mg/kg BW (1ml/50kg BW) SC.
- ✓ Pour on products or dips or sprays: Deltamethrin or Flumethrin 1ml/1L of water or as per product specifications.

11 DISEASES OF EYE & EAR

11.1 Conjunctivitis (Red eye)

It is inflammations of conjunctival mucous membrane.

Causes

- ✓ Foreign body
- ✓ Infectious cause

Signs & symptoms

- ✓ Ocular discharges, pain on touch, redness and swelling of mucosa.
- ✓ Regional lymph nodes may be enlarged in case of bacterial infection.
- ✓ Dull & depressed.
- ✓ Photophobia.

Treatment

- ✓ Correction of primary cause.
- ✓ Irrigate eye with sterile normal saline at least 3-4 times a day until the infection subside.
- ✓ Foreign body should be removed with care if any.
- ✓ Antiseptic eye lotion/wash with 1% boric acid solution.
- ✓ Eye drops/ antibiotic based eye ointment. Gentamicin eye drop. Apply 1-2 drops twice daily for a week **OR** Chloramphenicol eye ointment. Apply twice daily for a week.
- ✓ Meloxicam: All species @ 0.2-0.4mg/kg BW IM/IV/SC.
- ✓ Keep animals away from light source.

11.2 Keratitis

It is inflammation of cornea.

Causes

- ✓ Foreign body.
- ✓ Infectious causes.

Signs & symptoms

- ✓ Photophobia, lacrymation, blepharo-spasm and cloudiness of cornea/ corneal opacity.

Treatment

- ✓ Irrigate eye with sterile normal saline at least 3-4 times a day until the infection subside followed by boric acid 1% **OR**

- ✓ Remove the exudates using saline or 3% Sodium Bicarbonate.
- ✓ Eye drops/ antibiotic based eye ointment. Gentamicin eye drop. Apply 1-2 drops twice daily for a week or Chloramphenicol eye ointment **OR**
- ✓ Vitamin A therapy: Dogs 10,000IU/dog Oral for 3 days **OR**
- ✓ Dexamethasone **OR** Prednisolone @ 0.2- 0.5ml for 5-7days by subconjunctival route has been found useful for clear the opaque lesions.
- ✓ Animal should be confined in dark place.

11.3 Cataract

It is opacity of lens, characterized by milky appearance of lens, bluish lens, or white or gray appearance.

Causes

- ✓ Direct or indirect trauma.
- ✓ Electrocution of animals.
- ✓ Toxins.
- ✓ Metabolic disturbances like diabetes.

Signs & symptoms

- ✓ Lens becomes grey-white or amber colour.
- ✓ Blind.

Treatment

- ✓ Irrigate eye with sterile normal saline at least 3-4 times a day until the infection subside. Eye drops/ antibiotic based eye ointment. Gentamicin eye drop. Apply 1-2 drops twice daily for a week or Chloramphenicol eye ointment.
- ✓ Surgical treatment is necessary.

11.4 Glaucoma

Glaucoma is a disease condition of the eye characterized by marked rise in the intraocular pressure. It is seen in dogs but is very rare in other animals.

Cause

- ✓ Increased production or decreased drainage of aqueous humour.

Signs & symptoms

- ✓ There is severe pain.
- ✓ Vision is greatly reduced.
- ✓ Lacrimation.

Treatment

- ✓ Diuretic: Acetazolomide @ 2-5mg/kg BW thrice in a day oral for few days.
- ✓ Eye drop/ointment/gel: Chloramphenicol ointment for application **OR** Timolol eye drop/gel. Apply 1-2 drops twice daily for few weeks.

11.5 Otitis

It is inflammation of different parts of ear.

Causes

- ✓ Bacterial infection.
- ✓ Ear mites: *Otodectes cynotis.*

Signs & symptoms

- ✓ Discharges from the ear, pain on touch, scratching and shaking of ears.

Treatment

- ✓ Ear mite infection: Ivermectin @ 0.2mg/kg SC BW.
- ✓ Clean the ear the with hydrogen peroxide solution1.5%.
- ✓ Antibiotic ear drops: Gentamicin ear drop. Apply 1-2 drops twice daily till the infection subsides.
- ✓ Streptopenicillin: Dog @ 40000 IU/kg IM for 5-7 days in deep infections.

11.6 Aural Hematoma

It is collection of blood under the skin of the ear flap of a dog.

Causes

- ✓ Trauma.
- ✓ Ear infections.
- ✓ Insect bites.

Signs & symptoms

- ✓ Round or oval fluctuating swelling of the ear. Swelling may be medial or lateral side of the ear.

Treatment

- ✓ Surgical intervention is required to drain out the accumulated blood **OR**
- ✓ Aspiration of the fluid can be done with the help of syringe and needle. Inject 2ml cortisone and wrap the ear close to the head for 1 week.

12 METABOLIC DISEASES

12.1 Bovine Ketosis (Acetonemia/Hypoglycaemia)

Ketosis is a metabolic disorder that occurs in cattle when energy demands (e.g. high milk production) exceed energy intake and result in a negative energy balance. Ketotic cows often have low blood glucose (blood sugar) concentrations.

Causes

- ✓ Occurs when dairy cow receives insufficient calories to meet lactational demands plus body maintenance.
- ✓ Cow with normal appetite but is given an insufficient quantity of feed or a diet with low metabolic energy density.
- ✓ Alimentary ketosis- due to spoiled silage, lack of exercise, deficiency of cobalt.

Signs & symptoms

- ✓ Sudden and severe drop in milk yield.
- ✓ Depression, hypocalcaemia accompanies hypoglycaemia, faeces dry and covered with mucus.
- ✓ Belly tucked up and arched back.
- ✓ Valvular discharge & udder swollen.
- ✓ Crossing of legs, circling movement, head pushing, blindness, aimless wandering & vigorous licking of skin and inanimate objects.

Treatment

- ✓ Fluid therapy: Dextrose 20% @ 1000-2000ml IV for few days.
- ✓ Glucorticoid: Dexamethasone 10-30mg IM/IV (total dose).
- ✓ B-Complex & Liver extract @ 5-10ml deep IM.

12.2 Milk Fever (Parturient Paresis/Hypocalcaemia)

Parturient paresis is an acute to peracute, afebrile, flaccid paralysis of mature dairy cows that occurs most commonly at or soon after parturition. It is manifest by general muscular weakness, recumbency, circulatory collapse and depression of consciousness.

Causes

- ✓ Taking less amount of feed/food during late pregnancy and deficiency of Vit. D.
- ✓ Most commonly occur within 72hr of parturition in adult females characterized by hypocalcaemia, paresis, recumbency & circulatory collapse.

- ✓ The danger period extend upto about 10th day post partum and after this it may exist during the next 2-3 months at the time of high production, which mainly due to loss of calcium in milk.
- ✓ Forced exercise, long distance transport, and sudden deprivation of food and grazing on oxalate containing plant or green cereal crops.
- ✓ Seasonal incidence- commonly occurs in winter & spring.

Signs & symptoms (Divided in 3 stages)

- ✓ Stage I- Manifestation of hyper excitement and tetany. Tremor of muscle of hind limbs, refrain from moving, nodding of head, protrusion of tongue and crushing of teeth, body temperature in normal range but excitement may elevate the body temperature.
- ✓ Stage II- Also called as stage of sitting on sternum. Animal will rest on the sternum, diminished consciousness and drowsy condition, head resting on the flank ('S' shaped) posture, skin and extremities becomes cold, body temperature becomes sub-normal. Eyes are unable to blink.
- ✓ Stage III- Stage of lateral placement of the body. Temperature becomes depressed and signs of circulatory disarrangements, pulse cannot be appreciated and heart sound is completely inaudible but rate may go up to 120/min, recumbency bloat is evident, auria & oliguria due to paralysis of muscle, if treatment is not resorted animal may die due to cardiac-respiratory failure.

Treatment

- ✓ Calcium, Phosphorous, Mg & Dextrose 25% solution 400-600ml for 300-400kg animal. Half of the calculated dose is given by slow IV and remaining half by SC.
- ✓ Vitamin B Complex & Liver extract 5-10ml deep IM.
- ✓ Antihistamine
  Chlorpheniramine maleate 5-10ml IM.
- ✓ Powder Vitamin AB2D3K- Mix 100gm per ton of feed.

12.3 **Post Parturient Haemoglobinuria (Hypophosphataemia)**

Postparturient hemoglobinuria is a sporadic condition seen worldwide that most commonly affects individual high-yielding dairy cows at the onset of lactation. It is characterized by development of peracute intravascular hemolysis and anemia with potentially fatal outcome.

Causes

- ✓ Hypophsphataemia.
- ✓ Dietary factor- feed like cabbage, turnip, alpha grass.
- ✓ High drainage of phosphorous through milk.

Signs & symptoms

- ✓ Anorexia, dull, depression, weakness, hemoglobinuria- color of urine coffee color or deep red brown.
- ✓ Cessation of rumination, decrease in milk yield, constipation and straining during defecation and elevation of the base of the tail.

Treatment

- ✓ Organic phosphorous @ 2.5-5ml IM or Inorganic phosphorous (Sodium Acid Phosphate) @ 10-15ml IM.
- ✓ Iron Dextron @ 5-10ml IM weekly.
- ✓ Vitamin B Comlex & liver Liver extract @ 5-10ml deep IM twice weekly.

12.4 Azoturia/Monday Morning Sickness

It is the diseases of horse occurring mainly due to over exercise after prolong resting and is clinically manifested by stiff gait, hard/painful muscles and sometimes myoglobinuria.

Causes

- ✓ Mainly occurs in horse with good ration during prolonged resting and suddenly brought to exercise/work.

Signs & symptoms

- ✓ Signs develop 15 minutes to 1hour after beginning of exercise; one or all four limbs may be affected.
- ✓ Severe pain and distress, restlessness, profuse sweating, increase body temperature and pulse.
- ✓ Urine coffee colour or deep red brown due to present of myoglobin.

Treatment

- ✓ Analgesic
  Phenybutazone @ 2.2-4.4mg/kg BW IV once or twice daily **OR** Meloxicam @ 0.2-0.4mg/kg BW IM/IV/SC.
- ✓ Provide adequate drinking water.
- ✓ Parentral fluid therapy: Ringers lactate 1000-2000ml IV.
- ✓ Antihistaminic
  Chlorphenaremine maleate @ 5-10ml IM.
- ✓ Immediately withdraw the affected animal from work.
- ✓ Vitamin E & Selenium @ 1ml/25-50kg BW IM.
- ✓ Vitamin B- Complex @ 5-10ml deep IM.

12.5 Downer's Cow syndrome

Downer cow syndrome is a complication of recumbency associated with milk fever. Downer syndrome is characterized by inability of an animal to stand from recumbency voluntarily.

Causes

- ✓ It is mostly common in heavy breeds; disease is mainly concerned with hypocalcaemia.
- ✓ Downer cows are unable to rise after two injection of calcium indicating recurrence of hypocalcaemia.
- ✓ Muscle & nerve injury.
- ✓ Obesity & over feeding during dry period.

Signs & symptoms

- ✓ Animal will be in sternal recumbency.
- ✓ Bed sores.
- ✓ Poor body condition and sub normal temperature.
- ✓ Appetite, rumination, defecation and urination will be normal.
- ✓ Tachycardia.

Treatment

- ✓ Management: Attempt should be made to lift the cow on its fore legs. Arrangement of soft bed should be made. When it is not possible to lift the cow, frequently turning of the animal Cow should be turned at least at 3 hours interval.
- ✓ Calcium, Phosphorous, Mg & Dextrose 25% solution @ 400-600ml slow IV.
- ✓ Parentral fluid therapy: Ringers lactate @ 1000-2000ml IV.
- ✓ Vitamin B Complex @ 5-10ml deep IM twice weekly.

12.6 Pregnancy Toxemia/Kidding Sickness

This is the metabolic disease of the sheep and goat in late pregnancy characterized by hypoglycaemia, ketonemia, low liver glycogen content.

Causes

- ✓ Low level of blood glucose level.
- ✓ Insufficient energy gained during pregnancy.
- ✓ Hypoglycaemia is the root cause.

Signs & symptoms

- ✓ Anorexia, depression, twitching of muscle, rapid respiration and ataxia.
- ✓ Animal become blind stand with head pressed against some object, spasm of head and neck muscle, walk in circle and absence of corneal reflex.

Treatment

- ✓ Dextrose 20% @ 200ml I/V followed by DNS 200-300ml IV.
- ✓ Injection B complex & Liver extract @ 2-5ml deep IM twice weekly.

12.7 Hypomagnesaemia/Lactation tetany/Grass tetany

It is a highly fatal disease of adult ruminants and is characterized by hypomagnesaemia, muscular spasms, hyperexcitability, convulsions and rapid death.

Causes

- ✓ Low level of magnesium in feed during lactation.

Signs & symptoms

- ✓ Restlessness.
- ✓ Staggers.
- ✓ Over-alert appearance.
- ✓ Excitable or aggressive.
- ✓ Animal may fall down and go into convulsions.
- ✓ In many cases animals may die without showing any prior sign of disease.

Treatment

- ✓ Treatment should be prompt to be effective.
- ✓ Calcium, Phosphorous, Mg & Dextrose 25% solution: Cattle @ 400-500ml and Sheep & goats @ 50ml IV **OR**
- ✓ 20- 25% Magnesium sulphate @ 300ml IV in large ruminants.

12.8 Peripaturient Hypocalcemia/Eclampsia

It is an acute condition usually occurring 2-4 weeks after whelping in bitches.

Causes

- ✓ Excess loss of calcium in milk.
- ✓ Small breeds are highly susceptible and small bitches with large litter are more prone to the disease.

Signs & symptoms

- ✓ Restlessness, muscle tremors and violent seizures.
- ✓ Panting.

Treatment

- ✓ Calcium gluconate @ 0.5-1.5ml/kg BW diluted with Normal saline slow IV.
- ✓ Antipyretic
  Meloxicam @ 0.2mg/kg BW IM/IV.

13 POISONING

13.1 BEH (Bovine Enzootic Hematuria)

It is a chronic non-infectious disease of ruminants caused by bracken fern intoxication and is characterized by passage of red urine.

Cause

- ✓ Toxic factors present in bracken fern *Pteridium aquilinum.*

Signs & symptoms

- ✓ Red urine (hematuria).
- ✓ Ulcers and haemorrhages in the nose.
- ✓ Melena.
- ✓ Respiratory problems.

Treatment

- ✓ Hexamine @ 4-8gm and sodium acid phosphate @ 30g or boric acid 15gm.Sodium acid phosphate/boric acid is to be given 4 hours before the administration of hexamine. Hexamine has no action in alkaline urine, so Sodium acid phosphate is added to acidify the urine of Herbivores.
- ✓ Supportive treatment: B Complex @ 8-10 ml /cattle IM **OR**
- ✓ Vitamin and amino acids @ 5-10mg/animal/ day for 1-2 weeks.
- ✓ Hemostat
  Adrenochrome: Large animals @ 20-25mg (total dose) IM and Small animals @ 5-10 mg (total dose) IM **OR** Ethamsylate: Large animals @ 500 mg four times a day IM/IV.

13.2 Oak Poisoning in Cattle

Oak poisoning in cattle is caused by ingestion of considerable amount of tender leaves of oak plant especially during late winter to end of spring during scarcity of feed and fodder.

Cause

- ✓ Ingestion of considerable amount of tender leaves of oak plant *Quercus Sp.*

Signs & symptoms

- ✓ Dull & reduced appetite.
- ✓ Animal passes hard faeces with lot of mucus and blackish blood specks.

Treatment

- ✓ Activated charcoal-100g & Kaolin-100g. Divide into three parts and give three times in day orally.
- ✓ Sodium bicarbonate-360g. Divide into three parts and give twice daily for three days.
- ✓ Antihistamine
  Chlorpheniramine 30-50mg (total dose) IM for 3 days.

13.3 Adha-Rukha Disease in Equine

It is an alkaloid intoxication disease of equines all over the country caused by prolonged ingestion of *Ageretera sp* plant and is characterized by respiratory distress.

Cause

- ✓ Ingestion of *Ageretera sp* plant.

Signs & symptoms

- ✓ Inappetence & panting.
- ✓ Inability of the horse to climb uphill with the usual load.
- ✓ Coughing & respiratory distress.

Treatment

- ✓ There is no treatment for chronic condition.
- ✓ Once the animal has been diagnosed with Adha-Rukha disease, the standard line of treatment is aimed at prolonging the lifespan of the animal.
- ✓ Anti-inflammatory
  Phenylbutazone @ 2.2-4.4 mg/kg BW Oral/IV or Dexamethasone @ 0.1mg/kg BW IM/IV for 3-7days.
- ✓ Antibiotic
  Streptopenicillin @ 1500IU/kg BW IM for 7days.
- ✓ Anthelmintic
  Levamisole @ 7.5mg/kg BW Oral/SC.

13.4 Lantana camara Phototoxicity in Livestock

It is common in lower altitudes especially in plain area in the country characterized by phototoxic skin lesions and hepatic insufficiency.

Cause

- ✓ *Lantana camara*

Signs & symptoms

- ✓ Anorexia.

- ✓ Constipation.
- ✓ Oedematous swelling of ear & face.
- ✓ Patches of eruptions on the skin.
- ✓ Incoordination.
- ✓ Curled ear & pealing of dry skin.

Treatment

- ✓ Antidote: Activated charcoal-500g, Mag.Sulphate-500g, Liv52-100g & Honey. Mix and divide into three parts and give twice daily till the animal passes diarrheic dung.
- ✓ Antibiotic to combat secondary bacterial infections
  Streptopenicillin 2.5g/adult animal IM for 3 days.
- ✓ Antiseptic dressing of wound.
- ✓ Supportive therapy.

13.5 Chuuduk/Blue-green algae poisoning in Yaks

Blue green algae poisoning in yaks in the high altitudes in the country is caused by the algal toxins accumulated in stagnant water ponds during winter season when the yaks migrate downhill.

Cause

- ✓ Cyanobacterial toxins of *Anabaena* & *Lyngbia sp.*

Signs & symptoms

- ✓ Inappetence.
- ✓ Unable to graze.
- ✓ Foul smelling of breath and paralysis of hindquarters just before death.

Treatment

- ✓ Modified universal antidote: Activated charcoal-250g, Magnesium sulphate-500g, Light Magnesium oxide-250g, Kaolin-250g & Liv 52-250g. Give @ 50g/animal twice daily orally.
- ✓ Antihistamine
  Chlorpeniramine maleate @ 30-50mg (total dose) IM.
- ✓ Neurotinic: Vitamin B @ 10-15ml IM.
- ✓ Supportive fluid therapy: DNS & RL @ 1000-2000ml IV.

13.6 Pyrrolizidine alkaloid poisoning in Yaks

It is a chronic disease caused by the ingestion of senecio and crotalaria plants and is characterized by photosensitization, alopecia and cirrhosis.

Cause

- ✓ Ingestion of *Senecio* and *Crotalaria sp* plants

Signs & symptoms

- ✓ Dullness with occasional periods of excitability and frenzy.
- ✓ Severe diarrhoea.
- ✓ Photosensitization with alopecia and skin lesions.

Treatment

- ✓ Universal antidote: Activated charcoal-500g, Magnesium sulphate-500g, Liv52-100g & honey. Divide into three parts and give twice daily orally till the animal passes diarrhoeic dung.
- ✓ Antihistamine
  Chlorpheniramine maleate 30-50mg (total dose) IM.
- ✓ Antiseptic dressing of wound.
- ✓ Supportive fluid therapy.
- ✓ Vitamin B complex @ 5-10 ml IM.

13.7 Fagopyrosis

It is a disease of cattle and pigs caused by fagopyrin of buckwheat and related weeds characterized by phototoxic extensive skin lesions and hepatic insufficiency.

Cause

- ✓ Buckwheat plant *Polygonum fagopyrin*

Signs & symptoms

- ✓ Anorexia.
- ✓ Constipation
- ✓ Oedematous swelling of ear and face.
- ✓ Patches of eruptions on the skin.

Treatment

- ✓ Universal antidote: Activated charcoal-500g, Magnesium sulphate-500g, Liv52-100g & honey. Divide into three parts and give twice daily orally till the animal passes diarrhoeic dung.
- ✓ Antihistamine
  Chlorpheniramine maleate @ 30-50mg (total dose) IM.
- ✓ Antiseptic dressing of wound.

- ✓ Supportive fluid therapy.
- ✓ Vitamin B complex @ 5-10 ml IM.

14 INFECTIOUS DISEASES

14.1 Multispecies Diseases

14.1.1 Anthrax

Anthrax is an acute to peracute infectious disease of all domestic animals and human beings. Cattle and sheep are very susceptible to anthrax.

Cause

- ✓ *Bacillus anthracis*

Signs & symptoms

- ✓ Sudden death (often within 2 to 3 hours of being apparently normal).
- ✓ Very occasionally animal may show trembling, high temperature, difficulty breathing, collapse and convulsions before death. This occurs over a period of 24 hours.
- ✓ After death blood may not clot, resulting in small amount of bloody discharge from the nose, mouth and other openings.

Treatment

- ✓ Antibiotic
  Streptopenicillin @ 2.5g IM per day for 3-5days **OR** Oxytetracycline @ 5-10mg/kg BW IM/IV for 3-5days.
- ✓ Antihistamine
  Chlorpheniramine @ 5-10ml IM.

Prevention & control

- ✓ Refer anthrax guideline.

14.1.2 Pasteurellosis

Cause

- ✓ *Pasteurella multocida* (Hemorrhagic Septicemia)

It is a septicemic disease of cattle.

Signs & symptoms

- ✓ Depression and loss in appetite.
- ✓ High fever (107 ^{o}F).
- ✓ Mucopurulent discharge and labored breathing.

- ✓ Oedematous swelling in throat, ventral aspect of neck & brisket.

Treatment

- ✓ Antibiotic
  Sulfadimidine @ 100-130mg/kg BW IV for 3-5 days **OR** Oxytetracycline @ 10mg/kg BW IV for 3 days.
- ✓ Antihistamine
  Chlorpheniramine @ 5-10ml IM.
- ✓ Vitamine B complex @ 5-10ml IM.

Prevention & control

- ✓ The infected animals should be isolated and treated separately.
- ✓ Vaccination (refer vaccination schedule).

Pasteurella hemolytica

The bacteria cause disease in cattle, sheep & goat.

Signs & symptoms

- ✓ Depression and loss in appetite.
- ✓ High fever (107 ^{o}F).
- ✓ Mucopurulent discharge and labored breathing.

Treatment

- ✓ Antibiotic
  Oxytetracycline LA @ 20mg/kg BW IM. Repeat after 3-4days **OR** Sulfadimidine @ 100mg/kg BW IV for 3-5days.
- ✓ Antihistamine
  Chlorpheniramine @ 5-10ml IM.
- ✓ Vitamine B complex @ 5-10ml IM.

Prevention & control

- ✓ Control measures are similar to the ones used in cattle.

14.1.3 Black Quarter (BQ)

It is a disease of cattle & sheep characterized by high rise of body temperature, emphysematous sero-hemorrhagic swelling of the heavy muscles and lameness.

Cause

- ✓ *Clostridium chauvoei*

Signs & symptoms

- ✓ Fever and the affected limb can feel hot to the touch.
- ✓ Limb swells and can develop lameness.
- ✓ Crepitation (the sensation of air under the skin) can be noticed and the area begins to crackle under pressure.

Treatment

- ✓ Antibiotic
  Benzathine Penicillin @ 12000 IU/kg deep IM three doses every after 2 days **OR** Metronidazole @ 10mg/kg BW IV along with Penicillin. Penicillins may be injected into the lesion if it is localized.
- ✓ Antihistamine
  Chlorpheniramine @ 5-10ml IM.
- ✓ Dexamethasone @ 0.5-1mg/kg BW IV.

Prevention & control

- ✓ Good hygienic measures should be followed along with isolation of the infected animals.
- ✓ Dead animals should be burnt or buried deep.
- ✓ Vaccination (refer schedule).
- ✓ In an outbreak all cattle in the remainder of the herd should vaccinated immediately and injected with penicillin @ 6000 IU/kg IM.

14.1.4 Tetanus (Lock jaw)

It is a highly fatal, infectious disease of all domestic animals caused y neurotoxins and characterized by hyper anaesthesia, tetany and convulsions.

Cause

- ✓ *Clostridium tetenai*

Signs & symptoms

- ✓ Involuntary, persistent, intense and painful contraction of muscle.
- ✓ Stiff in some parts of body generally near the wound.
- ✓ Protrusion of the membrane nictitans.
- ✓ Lock jaw/ difficulty to open mouth.
- ✓ Horse stands in a still position, head poked out, limbs widely spread and the tail raised and erect.

Treatment

- ✓ Isolation of the animal.
- ✓ Metronidazole @ 20mg/kg Oral/IV thrice a day for 10 days **OR** Penicillin @ 12000IUkg deep IM for 5-7 days.
- ✓ Tetanus anti toxin @ 100000 to 200000 units IV usually should be given before the disease is fully developed.
- ✓ Prophylactic tetanus toxin @1500 to 3000 units especially at the time of castration and deep penetrating wounds.

Prevention & control

- ✓ Many cases of tetanus could be avoided by proper skin and instrument disinfection at castration and shearing time.
- ✓ The animals should be vaccinated with tetanus toxoid @ 5-10ml IM.

14.1.5 Enterotoxaemia

It is a condition caused by absorption of a large amount of toxins from the intestines. The disease occurs in calves, foals, lamb and piglets.

Cause

- ✓ *Clostridium perfringens*

Signs & symptoms

- ✓ Acute abdominal pain.
- ✓ Diarrhea/dysentery.
- ✓ Dull & depressed.

Treatment

- ✓ Antibiotic
  Sulphadimidine @200mg/kg (2 boli/50kg) Oral followed by 1boli/50kg for further 2 days only **OR** Penicillin G @ 6600 IU/kg (1ml per 45 kg BW) IM once daily for 3-5 days.
- ✓ Universal antidote: Activated charcoal- 2parts, Magnesium oxide- 1part, kaolin- 1part and tannic acid-1part. Give @ 30-100g twice daily, orally for 2-3days.

Prevention & control

- ✓ Vaccination (refer schedule).

14.1.6 Bacillary Hemoglobinuria

It is an acute, highly fatal toxemia of cattle and sheep characterized by high rise of body temperature, jaundice and hemoglobinuria.

Cause

- ✓ *Clostridium haemolyticum*

Signs & symptoms

- ✓ Rise in body temperature.
- ✓ Depression.
- ✓ Weakness & anorexia.
- ✓ Brisket oedema.
- ✓ Jaundice & passing of coffee coloured urine.
- ✓ Pregnant cows often abort.

Treatment

- ✓ Antibiotic
  Penicillin @ 20,000-40,000 IU/kg BW IM **OR** Oxytetracycline @ 5-10mg/kg BW IM/IV for 3-5days.
- ✓ Iron dextran @ 10ml IM in large animals on alternate day 3-4 times.
- ✓ Mineral mixture containing iron, copper and cobalt.

Prevention & control

- ✓ Vaccination.
- ✓ The carcases of animals dying of the disease should be disposed of by burning or deep burial.

14.1.7 Navel ill & Joint ill

Naval ill refers to inflammation of umbilical vein or umbilical cord and joint ill refers to inflammation of one or more joints. Both the conditions occur simultaneously and joint ill may follow navel ill. It commonly occurs immediately after the birth of young ones of all the species of domestic animals.

Causes

- ✓ *E coli, Proteus sp, Brucella sp, Campyloacter, Leptospira*

Signs & symptoms

- ✓ The affected area is swollen, painful to touch and filled with pus.

Treatment

- ✓ Antibiotic
  Penicillin @ 12000IU/kg IM for 2 weeks or OTC-LA 10mg/kg BW IM.
- ✓ Abscess should be surgically opened to drain out and treated with suitable antiseptics.

Prevention & control

- ✓ The newly born animals should be kept clean and a knot is tied an inch below the umbilicus, which is cut and tincture iodine is applied to prevent bacterial contamination.

14.1.8 Brucellosis

Brucellosis is a contagious disease characterized by inflammatory response of reticuloendothelial system and placenta during pregnancy resulting in death and expulsion of the fetus. It is of zoonotic importance.

Causes

- ✓ *Brucella abortus* in cattle, sheep & pigs.
- ✓ *B ovis* in sheep.
- ✓ *B canis* in dog.
- ✓ *B melitensis* in cattle, sheep & pigs.
- ✓ *B suis* in pigs.

Signs & symptoms

- ✓ Abortion (normally 3rd trimester of pregnancy).
- ✓ Temporary or permanent sterility.
- ✓ Orchitis.
- ✓ Retention of placenta.
- ✓ Lameness.
- ✓ Metritis.

Treatment

- ✓ Antibiotic
  Streptomycin @ 25mg/kg BW IM/IV daily for 8 days **OR** OTC @ 5-10mg/kg BW IM/IV for 3-5days.
- ✓ In dogs, since it is difficult to achieve cure brucellosis, it is recommended spaying/neutering to prevent transmission to other dogs.

Prevention & control

- ✓ For the eradication of brucellosis, test and slaughter method is widely adopted. However, feasibility of this practice in our country is not possible due to religious constraints.
- ✓ Hygienic disposal of uterine discharge, foetus, foetal membranes and infected carcases.
- ✓ Isolation and segregation of infected animals.
- ✓ Disinfect the contaminated premises.

14.1.9 Leptospirosis

Leptospirosis is a febrile disease caused by bacterial spirochestes characterized by fever, anemia and hemoglobinuria. It is of zoonotic importance.

Causes

- ✓ *Leptospira icterohemorrhagiae* in cattle, pigs, horses, dogs & cats.
- ✓ *L pomona* in cattle, sheep, pigs, horses.
- ✓ *L canicola* in dogs, cats, cattle, pigs & horses.

Signs & symptoms

- ✓ Fever, anorexia, jaundice & hemoglobinuria
- ✓ Loss of milk yield and abortion in cattle, pigs and goats
- ✓ Vomiting in dogs

Treatment

Cattle & Pigs:

- ✓ Antibiotic
  Streptomycin @ 12mg/kg BW IM twice daily for treatment of systemic infection and Streptomycin @ 25mg/kg BW single injection for elimination of leptospiuria in cattle & pigs **OR** Oxytetracycline @ 10mg/kg BW IM/IV for 3-5days.
- ✓ Blood transfusion 5-10L/450kg BW are indicated for treatment of haemolytic anemia.
- ✓ Fluid therapy.
- ✓ Vitamin B complex 5-10ml IM.

Dogs:

- ✓ Antibiotic
  Ampicillin @ 22mg/kg BW IV three times a day for 2 weeks **OR** Streptopenicillin @ 40000 IU/kg IM **OR** Doxycycline @ 5-10mg/kg BW twice daily Oral for 2 weeks **OR** Enrofloxacin @ 2.5-5mg/kg BW Oral/IM for 1-3 weeks plus Ampicillin.
- ✓ Antiemetic (antivomiting)
  Metaclopramide @ 0.2mg/kg BW IM/IV.
- ✓ Antidiarrhoeal
  Metronidazole @ 10mg/kg BW twice daily Oral/IV **OR** Loperamide @0.2mg/kg BW Oral.
- ✓ Fluid therapy: DNS, RL, NS, D5.
- ✓ For inappetence: Bcomplex @ 0.2-0.5ml IM/IV.
- ✓ Analgesic for muscle pain
  Meloxicam @ 0.2mg/kg BW IM/IV/SC.
- ✓ A blood transfusion may also be necessary if your dog has been severely hemorrhaging.

- ✓ Antacids
- ✓ Pantroprazole @ 0.5mg/kg BW IV OR Ranitidine @ 2mg/kg BW IM/IV.

Prevention & control

- ✓ The control of leptospirosis depends upon elimination of carrier animals, appropriate hygienic measures to control spread of infection and vaccination of susceptible animals.
- ✓ In an outbreak of the disease in cattle the simultaneous treatment of all animals with dihydrostreptomycin @ 25mg/kg BW and vaccination with the causative serotype bacterins has been successful in preventing new cases and especially abortion when pregnant cattle are involved.
- ✓ DHPPi+L vaccination of dogs (refer vaccination schedule).

14.1.10 Tuberculosis

It is a chronic contagious disease of animals.

Cause

- ✓ *Mycobacterium tuberculosis & M bovis.*

Signs & symptoms

- ✓ Loss of body weight.
- ✓ Dyspnoea.
- ✓ Increased respiration rate.
- ✓ Persistent painful dry hacking cough.

Treatment

- ✓ Treatment of bovine tuberculosis is not recommended due to its infectious nature. If an animal is found to be infected, it should be culled from the herd but due to religious constraints it is not possible.
- ✓ Antibiotics: Isoniazid @ 5mg/kg BW Oral in cattle for one and half month or Streptomycin @ 25-50mg/kg BW IM.

Prevention & control

- ✓ Disinfection of feeding trough, watering utensils, milking pans and animal premises.
- ✓ Newly purchased animal should be tested before allowing them to mix with the rest of the animals in the herd.

14.1.11 Paratuberculosis (Johne's disease)

It is chronic infectious disease of ruminants.

Cause

- ✓ *Mycobacterium paratuberculosis*

Signs & symptoms

- ✓ Emaciation.
- ✓ Submandibular oedema.
- ✓ Chronic diarrhoea.

Treatment

- ✓ Antibiotic
  Streptomycin @ 50mg/kg BW IM (reduce the shedding).

Prevention & control

- ✓ Isolation & segregation of infected animals.
- ✓ Frequent harrowing of pasture fields.
- ✓ Prevent contamination of feed and drinking water by feces.
- ✓ Disinfection of premises and utensils.
- ✓ Proper disposal of animal dung.

14.1.12 Foot & Mouth Disease (FMD)

It is an acute, highly contagious disease of all cloven footed animals such as cattle, sheep, goat, pig and yak.

Cause

- ✓ Picorna virus

Signs & symptoms

- ✓ Off feed.
- ✓ High fever that declines rapidly after 2 or 3 days.
- ✓ Excessive salivation.
- ✓ Blisters inside the mouth Blisters/lesions in the interdigital space and lameness.

Treatment (Supportive treatment)

- ✓ Antiseptic mouth wash with potassium permanganate, 2% alum and application of boroglycerine paint. 5-10% formaline.
- ✓ Foot lesions should be washed with 2% copper sulphate.
- ✓ OTC-LA 10mg/kg BW IM.

Prevention & control

- ✓ Refer FMD guideline.

14.1.13 Pestes des Petits Ruminants (PPR)

It is an acute, highly contagious disease of goats and sheep manifested fever, necrotic stomatitis, enteritis, pneumonia, occulonasal purulent discharge and death.

Cause

- ✓ Morbillivirus

Signs & symptoms

- ✓ High temperature.
- ✓ Discrete necrotic areas develop in mouth and extend over the entire oral mucosa.
- ✓ Serous discharge from nostrils and eyes.
- ✓ Excessive salivation, diarrhoea and dysentery.
- ✓ Respiratory signs include dyspnoea, sneezing and coughing.
- ✓ Abortions in pregnant goats.

Treatment (Supportive treatment)

- ✓ Antibiotics:
  Streptopenicillin @ 12,000 IU/kg BW IM **OR** Oxytetracycline @ 5-10mg/kg BW IM/IV for 3-5days.
- ✓ Fluid therapy: DNS & RL @ 500ml each IV.
- ✓ Vitamin B complex @ 3-6ml IM.

Prevention & control

- ✓ Isolation and treatment of diseased animals.
- ✓ Vaccination.

14.1.14 Warts (Papillomatosis)

Wart is a small, rough growth resembling a cauliflower or a solid blister. It is commonly seen in cattle, horses and dogs.

Cause

- ✓ Parapox papilloma virus

Signs & symptoms

- ✓ Warts appear as solid outgrowths of epidermis and occur most commonly on head, around the eyes, neck and shoulder in cattle and horses.
- ✓ In dogs, warts usually appear on lips and spreads to buccal mucosa and tongue.

Treatment

- ✓ Lithium antimony thiomalate: Cattle & horse @ 15ml deep IM as weekly injection on 3-4 occasions.
- ✓ Apply tourniquet on the wart in dogs.
- ✓ Autogenous vaccine prepared from wart tissue @ 20-25ml SC. Repeat once or twice at weekly intervals.
- ✓ Surgical removal.

14.1.15 Rabies

Rabies is an acute viral encephalomyelitis that may affect any warm blooded animal.

Cause

- ✓ Rabies virus

Signs & symptoms

- ✓ Furious from: very aggressive, attack and bite any objects, do not obey to their master.
- ✓ Dumb form: ataxia (an inability to coordinate voluntary muscle movements) and may walk into objects.
- ✓ In both cases: extensive drooling due to paralysis of the muscles used for swallowing.
- ✓ Milk production ceases abruptly in dairy cattle.
- ✓ Animal may appear hypersensitive and will follow sounds and movements intensely.
- ✓ The affected cattle may exhibit abnormal bellowing which may continue intermittently or voiceless attempts to bellow described as yawning.

Treatment

- ✓ No treatment should be attempted after the clinical signs are evident.
- ✓ The management of wound is very important, if a dog has been bitten by a rabid dog.

Prevention & control

- ✓ Refer Rabies guideline.

14.1.16 Theileriosis

It is a tick borne disease of cattle, sheep and goats.

Cause

- ✓ *Theileria sp*

Signs & symptoms

- ✓ High fever.
- ✓ Enlargement of superficial lymph nodes (prescapular lymph node).

- ✓ Anaemia.

Treatment

- ✓ Buparvaquone (drug of choice) @ 2.5mg/kg BW IM. A second injection may be given if parasitaemia is high **OR** OTC-LA @ 20mg/kg BW IM.
- ✓ Vitamin B complex @ 5-10ml IM.

Prevention & control

- ✓ Control tick population using acaricides.
- ✓ Vaccination of animals (Raksha Vac-T).
- ✓ Management of pastures through rotational grazing.

14.1.17 Babesiosis

It is a tick-borne infectious disease of cattle, horse, sheep, goats, dogs and pigs.

Cause

- ✓ Bovine babesiosis- *Babesia bigemina, B bovis, B divergence, B major & B berbera.*
- ✓ Equine Baesiosis- *B caballi & B equi.*
- ✓ Sheep & goats- *B motasi & B ovis.*
- ✓ Porcine Babesiosis- *B trautmanni & B perroncitoi.*
- ✓ Canine Babesiosis- *B canis & B gibsoni.*

Signs & symptoms

- ✓ Bovine and Porcine babesiosis - high fever, increased respiratory and heart rates, jaundice and coffee colored urine.
- ✓ Equine babesiosis- high fever, oedema of fetlocks and colic.
- ✓ Canine babesiosis- intermittent fever, anorexia, jaundice and hemoglobinuria.

Treatment

- ✓ All species: Diminazine aceturate @ 8-16mg/kg BW IM. Usually one dose is sufficient to bring clinical recovery.
- ✓ Vitamin B complex: Large animals @ 5-10ml IM & Small animals @ 0.5 to 2ml IM.

Prevention & control

- ✓ Control tick population using acaricides.
- ✓ Vaccination of animals.

14.1.18 Anaplasmosis

It is an infectious disease of cattle, sheep and goats characterized by debility, anemia and jaundice.

Cause

- ✓ *Anaplasma sp*

Signs & symptoms

- ✓ Cattle: Continuous or intermittent fever, inappetence, weakness and jaundice.
- ✓ Sheep & goat: The disease runs a subclinical course.

Treatment

- ✓ Antibiotic
  Oxytertracycline @ 10mg/kg BW IM/IV once daily for 3-5days.
- ✓ Vitamin B complex @ 5-10ml IM for 3 days.
- ✓ Fluid therapy.

Prevention & control

- ✓ Control tick population using acaricides.
- ✓ Vaccination.

14.1.19 Coccidiosis

It is a disease of young livestock that chiefly affects the intestines characterized by diarrhea or dysentery, emaciation, weight loss, decreased production and even death.

Cause

- ✓ *Eimeria sp*
- ✓ *Isospora sp*

Signs & symptoms

- ✓ Diarrhoe or dysentery with blood or mucus.
- ✓ Emaciation.
- ✓ Aneamia.
- ✓ Drop in production and high mortality.

Treatment

- ✓ Anticoccidial

Sulfadimidine: Calves & lambs @ 140mg/kg BW daily for 3 days Oral **OR** Nitrofurazone: @ 15mg/kg BW daily for 7 days Oral **OR** Amprolium: Cattle @ 10mg/kg BW daily for 5 days Oral, Sheep @ 50mg/kg BW & Goats @ 100mg/kg BW for 5 days and Pigs @ 25-56mg/kg BW for 5 days.

- ✓ For poultry, refer the products.

Prevention & control

- ✓ Separation of young and adult animals.
- ✓ Avoid overcrowding.
- ✓ Disposal of infected materials properly.
- ✓ Coccidiostat drugs can be mixed in feed and water and given as prophylactic treatment.

14.1.20 Erlichiosis

It a tick borne rickettsial disease of canines and equines but can occur in ruminants also.

Cause

- ✓ *Erlichia canis*

Signs & symptoms

- ✓ Anorexia.
- ✓ Depression and loss of stamina.
- ✓ Stiffness and reluctance to walk.
- ✓ Coughing and dyspnoea.

Treatment

- ✓ Antibiotic
  Oxytetracycline @ 22mg/kg BW Oral/IM/IV thrice daily for 2 weeks in acute infection and for 1-2 months in chronic infection **OR** Doxycycline @ 5-10mg/kg BW Orally for 10-14 days.
- ✓ Vitamin B complex @ 0.5-1ml IM.
- ✓ Fluid therapy.

Prevention & control

- ✓ Tick control.
- ✓ Chemoprophylaxis of dogs in endemic areas by using tetracycline @ 6.6mg/kg BW Oral daily for long period (at least for one tick season).

14.1.21 Gid

It is a parasitic disease of yaks and sheep caused by larval stage of dog tapeworm.

Cause

- ✓ Coenuros cerebralis, a larval or intermediate stage of *Taenia multiceps* or *Multiceps multiceps.*

Signs & symptoms

- ✓ In acute form, sheep and yaks show signs of blindness, ataxia, muscle tremors, nystagmus, excitability and collapse.
- ✓ Dullness, clumsiness and head pressing.
- ✓ Depending on the site of cyst in the brain, following signs are exhibited:
  - Cyst in forebrain- animal turns in circle towards the affected side.
  - Cyst in anterior brain- animal's head is held high against the chest and the animal steps high or may walk in a straight line until it meets an obstacle.
  - Cyst in hind brain- animal is excited, frightened and has jerky gait.
  - Cyst in lumber region- progressive paresis of hind limbs.

Treatment

- ✓ There are hardly any anthelmintics against the metacestode stage of tapeworm in brain and spinal cord. The best remedy is to prevent infection.
- ✓ Surgical operation may be attempted to remove the cyst.

Prevention & control

- ✓ Refer Gid guideline.

14.1.22 Fasciolosis

Fasciolosis is a parasitic disease caused by various species of *Fasciola*.

Cause

- ✓ *Fasciola hepatica*
- ✓ *F gigantica*

Signs & symptoms

- ✓ In acute form, in which sheep are affected show signs of high mortality, haemorrhages and even bleeding from natural orifices, diarrhoea in heavy infection & anaemia.
- ✓ In subacute form, the signs are dysentery, anaemia, oedema, anorexia and rough hair coats.
- ✓ In chronic form, there is cachexia, gradual production loss, submandibular oedema and persistent loose motion.

Treatment

- ✓ Triclabendazole: Cattle & Buffalo @ 12mg/kg BW Oral and Sheep & Goat @ 10mg/kg BW Oral **OR** Oxyclozanide: Cattle & Buffalo @ 10-15mg/kg BW Oral and Sheep & Goat @ 15mg/kg BW Oral.

Prevention & control

- ✓ Control the population of snails using mulluscicides like Copper sulphate (0.5%) in the farm premises. Biological control using snail predators such as ducks or physical destruction of snails can also be practised.
- ✓ Avoid animals from grazing in marshy areas.
- ✓ Treatment of paddy straw with urea.

14.2 Species Specific Diseases

14.2.1 Contagious Bovine Pleuropneumonia (CBPP)

It is a disease of bovines characterized by massive pathological changes in the thoracic cavity.

Causes

- ✓ *Mycoplasma mycoides* subspecies *mycoides*

Signs & symptoms

- ✓ Fever (41.5^0C), Anorexia, dyspnoea, grunt at expiration, cough when force to move, standing with elbows apart, arched back & head extended, swelling joints & lameness.

Treatment

- ✓ Antibiotic
  Oxytetracycline @10mg/kg IM for 5 days **OR** Tylosine @ 10mg/kg IM twice daily for 3-5 days.
- ✓ B complex @ 5-10 ml IM.
- ✓ Analgesics
  Meloxicam @ 0.2-0.4mg/kg BW IM/IV/SC.

Prevention & control

- ✓ The spread of the disease is related to the movement of cattle. So movement of infected cattle could be stopped.
- ✓ Isolate the infected cattle and treat them.
- ✓ Vaccination.

14.2.2 Contagious Caprine Pleuropneumonia (CCPP)

It is primarily a contagious disease of goats characterized by severe pneumonia and high mortality rate.

Cause

- ✓ Mycoplasma mycoides subspecies *capri*

Signs & symptoms

- ✓ Anorexia, dullness, depression, nasal discharge, abdominal respiration, fever and dry painful cough.
- ✓ Dyspnoea, frequent lying down, open mouth breathing, protusion of tongue and excessive frothy salivation.

Treatment

- ✓ Antibiotic
  Tretracycline Hcl @ 11mg/kg BW, Oral twice daily for 3-5 days **OR** Oxytetracycline @ 15mg/kg BW IM for 6-8 days **OR** Tylosin @ 10mg/kg BW IM for 3 days.
- ✓ B complex @ 2-5 ml IM.
- ✓ Analgesics
  Meloxicam @ 0.2-0.4mg/kg BW IM/IV/SC.

Prevention & control

- ✓ The spread of the disease is related to the movement of cattle. So movement of infected cattle could be stopped.
- ✓ Isolate the infected cattle and treat them.
- ✓ Vaccination.

14.2.3 Infectious Bovine Rhinotracheitis (IBR)

Infectious Bovine Rhinotracheitis (IBR) is an acute, highly contagious disease of cattle characterized by fever, rhinotracheitis, conjunctivitis, encephalitis, abortion and pustular vulvovaginitis.

Cause

- ✓ A highly contagious disease caused by herpes virus (BHV).
- ✓ Two forms:
  - Respiratory form(IBR)
  - Reproductive form (IPV)

Signs & symptoms

Respiratory form:

- ✓ Respiratory form more common but in Bhutan no clinical cases has been recorded till date.
- ✓ Onset is sudden, fever (42^{o}C).
- ✓ Reddening of the nose (Red nose).
- ✓ Serous and purulent discharge from nose and eyes.
- ✓ Salivation, shallow ulcers on nasal mucosa and sometimes conjunctivitis and occasionally death within 24 hrs.

Reproductive form:

- ✓ Abortion during early stage of gestation (3^{rd} to 4^{th} month of gestation).
- ✓ Painful urination, grey translucent raised foci which ulcerate later and found on the mucous membrane of vulva and vagina (Infectious pustulo vulvo vaginitis-IPV) prepuce and penis.

Treatment (Supportive treatment)

- ✓ No treatment since it is a viral disease.
- ✓ Broad spectrum antibiotics to control secondary infection.
- ✓ Strong Tr. Iodine paint on the mucous membrane of vulva and vagina in the case of reproductive form.

14.2.4 Papillomatous Digital Dermatitis (PDD)

It is disease in bovines characterized by dermatitis of skins around the digits and above the coronary band, predominantly seen around the dew claws, usually affects the hind feet.

Cause

- ✓ *Treponema* sps

Signs & symptoms

- ✓ Severe dermatitis of skins around the digits and above the coronary band, predominantly seen around the dew claws, usually affects the hind feet.
- ✓ Papillomatous growth of wart-like tissues at the affected areas, keratosis, cracking of skin at the coronary band and foul smelling affected tissues.
- ✓ The affected animals exhibit lameness with typical toe-tip walking gait.

Treatment

- ✓ Combination of a parental administration of benzathene penicillin @ 12000 IU/kg BW, deep IM two shots at an interval of 4 days and a foot bath and/or foot spray with 10% zinc sulphate solution.

Prevention & control

- ✓ Isolate the affected animals and treat the animals.

14.2.5 Strangles (Equine distemper)

Acute contagious disease of young horses, asses and mules characterized by muco-purulent inflammation of the nasal mucosa and of pharynx, accompanied by abscess formation in the sub maxillary or the pharyngeal lymphatic glands.

Cause

- ✓ *Streptococcus equi*

Symptoms

Typical:

- ✓ Temperature to 104^0F to 106^0F with depression and anorexia.
- ✓ Inflamed nasal mucosa and serous bilateral nasal discharge in 2-3 days.
- ✓ Discharge becomes copious, mucopurulent, thick and creamy.
- ✓ Hot painful swelling of the submaxillary gland which develops into abscess with thick pus.
- ✓ Laryngitis, pharyngitis with cough.

Atypical:

- ✓ Mild and irregular fever.
- ✓ Respiratory cattarahl lasting few days.
- ✓ Nasal discharge.

Treatment

- ✓ Isolate the affected animal.
- ✓ Penicillin @12000IU/kg BW IM for 5-7 days **OR** Sulphanomides @ 1ml/kg BW daily for 5-7days.
- ✓ Use of boric lotion for removing the discharges from eyes and nose.
- ✓ Supplement of freshly cut green grasses, fresh raw carrots, mashes and boiled oats.
- ✓ Disinfection of the premises.

Prevention & control

- ✓ Good hygienic measures should be adopted in the stables and infected animals should be isolated and treated.
- ✓ Vaccination with killed streptococcal vaccine @ 10ml SC (a phenol-killed vaccine containing different types of streptococci).

14.2.6 Glanders

Chronic, occasionally an acute disease characterized by nodules and ulcers in the nasal mucosa, lungs and skin.

Cause

- ✓ *Burkholderia mallie*

Signs & symptoms

Acute glanders:

- ✓ High temperature of 105 ^{o}F to 107 ^{o}F.
- ✓ Stiff, dull and depressed.
- ✓ Increased respiration and difficult to breath.
- ✓ Muco-purulent discharge from both the nostrils.

- ✓ Ulceration of mucus membrane and enlargement of the submaxalliary gland.
- ✓ Loss of appetie, diarrhea and death.
- ✓ Acute form is very rapid and the animal dies with 3 to 14 days.

Chronic glanders:

- ✓ Animal sometimes loses it vigour.
- ✓ Dry coat/hide
- ✓ Chronic cough and sometimes sudden bleeding from nose.
- ✓ Nasal discharge often from one sided which is glaring and sticky.
- ✓ Submaxillary gland swollen.
- ✓ Ulceration on the nasal septum.
- ✓ Temperature may fluctuate from 101 ^{o}F to 103 ^{o}F.
- ✓ In chronic cases the horse may be affected for years, sometimes the symptoms disappear and the animal becomes apparently all right but relapses occur from the cases such as overwork, starvation and insanitary management.

Treatment

- ✓ Usually treatment is not undertaken because the disease is zoonotic and therefore the affected animal should be removed by slaughter.
- ✓ If necessary, Sulphadimidine for 20 days can be used and is found to be highly effective.

Prevention & control

- ✓ Positive animals should be destroyed.
- ✓ Vigourous disinfection where glanders cases have been detected.

14.2.7 Equine Infectious Anemia (EIA)

Equine infectious anemia (EIA) is a noncontagious, infectious disease of horses and other Equidae. It is caused by an RNA virus classified in the Lentivirus genus, family Retroviridae.

Cause

- ✓ Lentivirus of Retroviridae family.

Signs & symptoms

- ✓ Acute form: Recurrent fever (105^{o}F), marked weakness, anorexia, muscle tremors, and visible hemorrhage on mucus membrane.
- ✓ Moderate form: The aforementioned signs are less marked in this form. The horses are well but experience a steady weight loss, anemic and reveal mild icterus.
- ✓ Chronic form: Exhaustion, poor performance, weight loss and anemia.

Treatment (Supportive treatment)

- ✓ There is no specific treatment.
- ✓ Broad spectrum antibiotics should be given for 3-5days.
  Oxytertracycline @ 5-10mg/kg BW IM/IV.
- ✓ Iron dextran.
- ✓ Oral hematinic mixture containing copper, cobalt and iron salts.

Prevention & control

- ✓ Isolate the suspected or sick animals from the healthy horses.
- ✓ Provide fresh drinking water and good nutritional diet.
- ✓ Proper disinfection of stable.

14.2.8 Equine Influenza

It is an acute contagious diseases characterized by rapidly rising temperature, great prostration, congestion and edema of the conjunctiva often involving the respiratory and other system.

Cause

- ✓ Influenza virus

Symptoms

Simple uncomplicated case:

- ✓ Rapid rising temperature higher than 106 ^{o} F.
- ✓ Great depression and anorexia.
- ✓ Slight watery discharge from eyes and nostrils.
- ✓ A mild cough.

Complicated cases:

- ✓ Pink eye form: photophobia, swelling of the eyelids and conjunctiva, which is of a brownish –red color, severe pink eye, profuse tear.
- ✓ Respiratory form: harsh, dry, painful, congestion of nasal mucosa, first serous and later muco-purulent discharge from nose. Sub-maxillary and suppurate.
- ✓ Circulatory form: pericarditis and endocarditis with swelling in dependent parts
- ✓ Abdominal form: flatulence, constipation, transient colic, enteritis, diarrhoea and nephritis.
- ✓ Rheumatoid form: affects muscle, joints, tendons and tendon sheath, oedema of the legs.

Treatment (Supportive treatment)

- ✓ For bacterial complication Penicillin @ 12000IU/kg IM for 5 days.
- ✓ For eye lesion boric lotion and ointment.

Prevention & control

- ✓ The infected or suspected cases should be isolated from the health horses and kept in insect proof houses.
- ✓ Since mares may transmit the disease to their offspring, such animal should not be used for breeding purposes.
- ✓ Proper disinfection of infected stables and equipments.

14.2.9 Equine Lymphangitis

Equine lymphangitis is an inflammation or swelling associated with impairment of the lymphatic system, particularly in a limb, in horses. It is most commonly a bacterial infection, although bacterial culture may be negative.

Cause

- ✓ *Corynebacterium pseudotuberculosis*

Signs & symptoms

- ✓ Extreme swelling of a limb, usually a hind limb, is seen, often as far proximally as the hock, or occasionally as far proximally as the stifle.
- ✓ In some cases, swelling continues through the udder or sheath and along the subcutaneous abdominal veins. In the early stages, the swelling is primarily a "pitting oedema"; in other words, if pressed, a depression remains in the skin of the limb.
- ✓ The affected leg may reach twice or even three times its normal size, and may be very sensitive to the touch. In chronic cases, much of the swelling is firm, as scarring and fibrosis occur.

Treatment

- ✓ Broad-spectrum antibiotics
  Doxycycline @ 10mg/kg BW Oral once or twice daily for 5days **OR** Penicillin @ 12000IU/kg IM for 5 days.
- ✓ Anti-inflammatory
  Flunixin meglubin (drug of choice) @ 1.1mg/kg BW IM/IV **OR** Phenylbutazone @ 2.2-4.4mg/kg BW IV.
- ✓ In ulcerative lymphangitis, intravenous iodine salts may also be used; and abscesses should be poulticed or lanced.
- ✓ Physiotherapy is also important, particularly maintaining movement by walking out and massage to improve lymphatic drainage and reduce the oedema.
- ✓ Bandages may also be useful, as may cold hosing in the initial phase. A sweat bandage or poultice is often applied. An overly tight bandage should not be applied, as swelling may

continue, decreasing circulation through the limb, and potentially causing a bandage-bow.

Prevention & control

- ✓ Prevention can be more difficult, particularly once lymphangitis has occurred and caused some permanent scarring.
- ✓ Obviously hygiene and cleanliness of the skin has got to be scrupulous; any wounds must be addressed immediately.

14.2.10 Swine Erysipelas (Diamond skin disease)

It is an infectious disease of swine characterized by appearance of diamond shaped skin lesions.

Cause

- ✓ *Erysipelothrix rhusiopathiae*

Signs & symptoms

- ✓ Severely affected animals will have high rise of temperature.
- ✓ Incoordination and shifting lameness.
- ✓ Partial to complete loss of appetite.
- ✓ Cutaneous lesions known as diamond skin.
- ✓ Abortion may take place followed by infertility problems.

Treatment

- ✓ Penicillin @ 50,000IU /kg BW IM every 48 hours for 5-7 days.
- ✓ Prednisolone @ 2-5ml IM (total dose).

Prevention & control

- ✓ All gilts and young boars should be vaccinated twice 2-4 weeks apart (according to manufacturer's instructions) before entering the breeding herd.
- ✓ Sows should be vaccinated 3-4 weeks prior to farrowing and boars should be vaccinated every 6 months. Progeny may need vaccination if there is a high challenge.
- ✓ If disease breakdown occurs despite a vaccination program, review hygiene and management practices and consider changing to all-in-all-out production systems.

14.2.11 Classical Swine Fever/Hog cholera

It is a acute highly contagious viral disease affecting pigs of all ages characterized by rapid and sudden onset, high mortality and mortality with generalized hemorrhages.

Cause

- ✓ *Toga virus(RNA virus)*

Signs & symptoms

It usually appears in three forms viz per-acute, acute and chronic form.

Per-acute form:

- ✓ Most common in young pigs. The disease onset is rapid and fatally ends within 24 hours.

Acute form:

- ✓ Sharp rise in the body temperature.
- ✓ Animals will appear depressed, anorectic & dehydrated due to severe diarrhoea.
- ✓ Hyperemia of skin with purplish discolouration of snout, ears and inner side of legs.
- ✓ Mucopurulent to purulent discharges from the eyes.

Chronic form:

- ✓ Chronic diarrhoea and chronic pneumonia.

Treatment

- ✓ No specific treatment against the virus.

Prevention & control

- ✓ Vaccination.
- ✓ Isolation of infected or suspected animals from healthy ones.
- ✓ Proper disinfection of pens of infected pigs.

14.2.12 Glasser's Disease

It is an acute infectious disease of pigs characterized by fibrinous polyserositis.

Cause

- ✓ *Haemophilus suis* or *H. parasuis.*

Signs & symptoms

- ✓ Swollen joints and lameness.
- ✓ Anorexia and depression

Treatment

- ✓ Drugs like sulphadimidine@100mg/kg BW for 5 days.
- ✓ Tetracycline hydrochloride @ 22 mg/kg BW Oral for 5-7days.

Prevention & control

- ✓ Isolation of sick animals and treatment.
- ✓ Disinfection of premises.

14.2.13 Mycoplasmal Pneumonia

It is a contagious disease of swine with persistent dry cough and impairment of growth.

Cause

- ✓ *Mycoplasma hypopneumoniae*

Signs & symptoms

- ✓ Acute respiratory distress and coughing.
- ✓ Anorectic and unthriftiness.

Treatment

- ✓ Antibiotic
  Doxycycline @ 200mg/kg of feed for 4-5 days.

Prevention & Control

- ✓ Observing strict bio-security measures.

14.2.14 Kennel Cough

Kennel cough is an upper respiratory infection affecting dogs. There are multiple causative agents, the most common being the bacterium *Bordetella bronchiseptica.*

Cause

- ✓ *Bordetella bronchiseptica.*

Signs & symptoms

- ✓ Persistent dry, hacking cough accompanied by clear nasal or eye discharge.
- ✓ In severe cases, symptoms progress and can include pneumonia, inappetence, fever, lethargy and even death.

Treatment

- ✓ Advice to provide general supportive care like rest, good hydration and nutrition.
- ✓ Cough syrups.

- ✓ Antibiotics are indicated if the dog develops fever and a mucopurulent nasal discharge. Streptopenicillin @ 40000 IU/kg IM for 5-7days **OR** Amoxicillin @ 10-20mg/kg BW twice daily Oral for 5-7days.
- ✓ Antihistamine
  Cholorophenireamine maleate @ 0.2-0.4 mg/kg BW twice daily Oral/IM.
- ✓ Pneumonia: Amoxicillin @ 10-20mg/kg BW twice daily oral **OR** Cephalexin @ 20-40mg thrice daily Oral for 5-7days.
- ✓ Antibiotics given by nebulizer may be more effective than those given orally or by injection. This is because the bacteria attach to the mucosal surface of the respiratory tract and are difficult to reach with systemic antibiotics.

Prevention & control

- ✓ Vaccination.
- ✓ The dogs should be kept in hygienic and properly ventilated houses/kennels.
- ✓ Isolate the sick ones.
- ✓ Disinfection of kennel.

14.2.15 Canine Distemper (CD)

Canine distemper is a contagious and serious disease caused by a virus that attacks the respiratory, gastrointestinal and nervous systems of puppies and dogs.

Cause

- ✓ Canine Distemper is caused by canine distemper virus belonging to Morbilivirus.
- ✓ The highest incidence of the disease occurs in unvaccinated puppies 6 to 12 weeks of age, at which time maternal antibodies fall below protective levels.

Signs & symptoms

- ✓ Fever.
- ✓ Pulmonary/Respiratory form: lacrimation and nasal discharge.
- ✓ Digestive form: vomiting, foul smelling watery to mucus blood tinged diarrhea.
- ✓ Ocular form: swelling of eyelids, conjunctivitis and purulent ocular discharge.
- ✓ Cutaneous form: pustules on belly and at inner side of thigh and skin of foot pads and nose become hard (referred as hard pad).
- ✓ Nervous form: excitement and convulsions.

Treatment (Supportive treatment)

- ✓ Antibiotic

Ampicillin @ 22mg/kg BW IV three times a day for 1 week **OR** Amikacin @ 10mg/kg BW three times a day IM/IV for 5-7days **OR** Cefotaxime @ 25-50mg/kg BW twice a day IM/IV for 5 days.

- ✓ Antiemetic
  Metaclopramide @ 0.2mg/kg BW IM/IV **OR** Ondansetron @ 0.5mg/kg BW Oral/IV.
- ✓ Antidiarrhoeal
  Metronidazole @ 10mg/kg BW twice daily Oral/IV **OR** Loperamide @0.2mg/kg BW Oral.
- ✓ Fluid therapy: DNS, RL, NS, D5.
- ✓ For inappetence: Bcomplex @0.2-1ml IM.
- ✓ Analgesic/antipyretic
  Meloxicam @ 0.2mg/kg BW IM/IV/SC.
- ✓ Antacids
  Pantroprazole @ 1mg/kg BW IM/IV **OR** Ranitidine@ 1-2mg/kg BW IM/IV.
- ✓ Anticonvulsants
  Diazepam@ 0.5mg/kg BW IM/IV.

Prevention & control

- ✓ Isolation of sick dogs and treatment.
- ✓ Disinfection of premises.
- ✓ DHPPi+L vaccination.

14.2.16 Parvo Viral Enteritis (PVE)

It is a very contagious and potentially fatal viral disease seen in dogs. Most commonly, parvovirus causes gastroenteritis, or inflammation of the stomach and intestines.

Cause

- ✓ Parvo viral enteritis is caused by parvovirus.
- ✓ Parvo affects dogs of all ages, but most cases occur in puppies 6 to 20 weeks of age.
- ✓ Dobermanns, Rottweilers, Pit Bull Terriers and Labrador Retrievers appear more susceptible than other breeds.

Signs & symptoms

- ✓ Anorexia, lethargy, fever, vomiting, diarrhea with or without blood and dehydration.
- ✓ Pups with severe abdominal pain exhibit a tucked-up abdomen.
- ✓ Suspect parvo in all pups with the abrupt onset of vomiting and diarrhea.

*Treatment (*Supportive treatment)

- ✓ There is no antiviral therapy.

- ✓ Puppies and dogs should not be fed or allowed to drink until the vomiting has stopped.
- ✓ Antibiotic
  Amikacin @ 10mg/kg BW three times a day for 5-7days **OR** Cefotaxime 25-50mg/kg BW twice daily for 5-7days.
- ✓ Antiemetic
- ✓ Metoclopramide @ 0.2mg/kg BW IM/IV **OR** Ondansetron @ 0.5mg/kg BW IV.
- ✓ Antidiarrhoeal
  Metronidazole @ 10mg/kg BW twice daily Oral/IV **OR** Loperamide @ 0.2mg/kg BW Oral.
- ✓ Fluid therapy: DNS, RL.
- ✓ Blood plasma transfusion.
- ✓ B complex @ 0.1-1ml IM/IV.
- ✓ Shock: Dexamethasone @ 0.2-1ml IM/IV.
- ✓ Gastric protectant: Sucralfate.
- ✓ Antacids
  Pantroprazole @ 1mg/kg BW **OR** Ranitidine@ 1-2mg/kg BW IM/IV.
- ✓ Broad spectrum anthelmintics.

Prevention & control

- ✓ Isolation of sick dogs and treatment.
- ✓ Disinfection of premises.
- ✓ DHPPi+L vaccination.

14.2.17 Infectious Canine Hepatitis (ICH)

Infectious canine hepatitis (ICH) is a worldwide, contagious disease of dogs with signs that vary from a slight fever and congestion of the mucous membranes to severe depression, marked leukopenia, and coagulation disorders.

Causes

- ✓ Infectious canine hepatitis is a highly contagious viral disease caused by canine adenovirus-1.
- ✓ Dogs up to 1 year of age are more susceptible.

Signs & symptoms

- ✓ A dog with acute infection runs a fever up to 106 °F (41.1°C), refuses to eat, passes bloody diarrhoea, and, often, vomits blood. The dog has a tucked-up belly caused by painful swelling of the liver.

Treatment (Supportive treatment)

- ✓ Blood transfusion @ 5-15ml/kg BW by slow IV in severe cases.
- ✓ Antibiotic
  Ampicillin @ 22mg/kg BW IV three times a day for 1 week **OR** Amikacin @ 10mg/kg BW three times a day IM/IV for 5-7days **OR** Cefotaxime 25-50mg/kg BW twice a day IM/IV.
- ✓ Antiemetic
  Metaclopramide @ 0.2mg/kg BW IM/IV.
- ✓ Antidiarrhoeal
  Metronidazole @ 10mg/kg BW twice daily Oral/IV **OR** Loperamide @ 0.2mg/kg BW Oral.
- ✓ Fluid therapy: DNS, RL, NS, D5.
- ✓ For inappetence: Bcomplex @ 0.2-1ml IM/IV.
- ✓ Analgesic/antipyretic
  Meloxicam @ 0.2mg/kg BW IM/IV/SC.
- ✓ Antacids
  Pantroprazole @ 1mg/kg BW **OR** Ranitidine @ 1-2mg/kg BW IM/IV.

Prevention & Control

- ✓ Isolation of sick dogs and treatment.
- ✓ Disinfection of premises.
- ✓ DHPPi+L vaccination.

14.2.18 Canine Corona Virus Infection

A canine coronavirus infection is a highly contagious intestinal disease that can be found in dogs all around the world. Coronavirus infection is generally considered to be a relatively mild disease with sporadic symptoms, or none at all.

Cause

- ✓ Canine coronavirus.

Signs & symptoms

- ✓ Clinical signs are quite variable as younger puppies reveal symptoms while in adult dogs, disease symptoms are not apparent.
- ✓ Vomiting & diarrhea.

Treatment (Supportive treatment)

- ✓ Antibiotic

Ampicillin @ 22mg/kg BW IV three times a day for 1 week **OR** Amikacin @ 10mg/kg BW three times a day IM/IV for 5-7days **OR** Cefotaxime @ 25-50mg/kg BW twice a day IM/IV.

- ✓ Antiemetic
  Metaclopramide @ 0.2mg/kg BW IM/IV.
- ✓ Antidiarrhoeal
  Metronidazole @ 10mg/kg BW twice daily Oral/IV **OR** Loperamide @ 0.2mg/kg BW Oral.
- ✓ Fluid therapy: DNS, RL, NS, D5.
- ✓ For inappetence: Bcomplex @ 0.2-1ml IM/IV.
- ✓ Analgesic/antipyretic
  Meloxicam @ 0.2mg/kg BW IM/IV/SC.
- ✓ Antacids
  Pantroprazole @ 1mg/kg BW **OR** Ranitidine @ 1-2mg/kg BW IM/IV.

Prevention & Control

- ✓ Isolation of sick dogs and treatment.
- ✓ Disinfection of premises.
- ✓ DHPPi+L vaccination.

14.2.19 Canine Heartworm Infection

Heartworm disease or dirofilariasis is a serious and potentially fatal disease. It is caused by a blood-borne parasite known as *Dirofilaria immitis*. Adult heartworms are found in the heart and adjacent large blood vessels of infected dogs.

Cause

- ✓ *Dirofilaria immitis*

Signs & symptoms

- ✓ In cases of light infection there are no apparent signs but in heavy infection, animal show circulatory distress.

Treatment

- ✓ The dogs should be given treatment for cardiac insufficiency initially.
- ✓ The infected dogs are first treated with Thiacetarsamide @ 2.2mg/kg BW IV for 3 days to remove adult heartworms.
- ✓ Further treatment with Levamisole @ 7.5mg/kg BW Oral for 10-14 days is given 6 weeks later to remove microfilariae.

Prevention & Control

- ✓ Ivermectin @ 0.2mg/kg BW SC.
- ✓ Diethylcarbamazine @ 6.6mg/kg BW Oral for 3-4 weeks.

14.2.20 Feline Panleukopenia

Feline panleukopenia/Feline Distemper is a highly contagious, often fatal, viral disease of cats that is seen worldwide. Kittens are affected most severely.

Cause

- ✓ Panleukopenia virus (Parvoviridae)
- ✓ The disease is seen in young kittens.

Signs & symptoms

- ✓ Diarrhoea
- ✓ Abdominal pain
- ✓ Vomiting
- ✓ Leucopoenia

Treatment (Supportive treatment)

- ✓ There is no specific antiviral treatment available.
- ✓ Antibiotic
  Ampicillin @ 22mg/kg BW IV every three times a day for 1 week **OR** Amikacin @ 10mg/kg BW three times a day IM/IV @ for 5-7days OR Cefotaxime 25-50mg/kg BW twice a day IM/IV.
- ✓ Antiemetic
  Metaclopramide @ 0.2mg/kg BW IM/IV.
- ✓ Antidiarrhoeal
  Metronidazole @ 10mg/kg BW twice daily Oral/IV **OR** Loperamide @ 0.2mg/kg BW Oral.
- ✓ Fluid therapy: DNS, RL, NS, D5.
- ✓ For inappetence: Bcomplex @ 0.2-1ml IM/IM.
- ✓ Analgesic/antipyretic
  Meloxicam @ 0.2mg/kg BW IM/IV/SC.
- ✓ Antacids
  Pantroprazole 1mg/kg BW **OR** Ranitidine 1-2mg/kg BW IM/IV.

Prevention & control

- ✓ Isolation of infected animals and treatment.
- ✓ Disinfection of premises.

- ✓ Vaccination with Calcivirus, Rhinotracheitis and Panleukopenia vaccine (Tricat/Feligen CRP).

14.2.21 Feline Rhinotracheitis

Feline viral rhinotracheitis is an upper respiratory or pulmonary infection of cats caused by feline herpesvirus 1, of the family Herpesviridae.

Cause

- ✓ Feline herpes virus.
- ✓ The disease occurs in different age groups.

Signs & symptoms

- ✓ Rhinitis with serous nasal exudation.
- ✓ High fever.
- ✓ Anorexia & depression.

Treatment (Supportive treatment)

- ✓ Antiseptic cleaning of eye & nostrils regularly.
- ✓ Antibiotic
  Ampicillin @ 22mg/kg BW IV thrice daily for 1 week **OR** Amikacin @ 10mg/kg BW three times a day IM/IV for 5-7days **OR** Cefotaxime 25-50mg/kg BW twice a day IM/IV.

Prevention & control

- ✓ Isolation of infected animals and treatment.
- ✓ Disinfection of premises.
- ✓ Vaccination with Calcivirus, Rhinotracheitis and Panleukopenia vaccine (Tricat/Feligen CRP).

14.2.22 Fowl Cholera

Fowl cholera is a contagious disease affecting domesticated and wild birds. It usually appears as a septicemic disease associated with high morbidity and mortality.

Cause

- ✓ *Pasteurella multocida*

Signs & symptoms

- ✓ Unexpected deaths occur.
- ✓ Laying chickens may be found dead on the nest.

- ✓ Anorexia, depression, cyanosis and nasal or oral discharge of mucus.
- ✓ White watery or green mucoid diarrhea
- ✓ Swelling of joint, wattle, foot pad or tendon sheath.
- ✓ Exudates cheesy may accumulate in a conjunctiva sac.
- ✓ Torticollis.

Treatment

- ✓ Sulphadiazine/trimethoprim @ 15-30mg/kg IM twice daily for 5 days **OR** Tetracycline HCL @ 5g in 4.5 litres of drinking water for 7 days.
- ✓ During the treatment birds should be given only the medicated water.

Prevention and control

- ✓ Good management practices.
- ✓ Vaccination.

14.2.23 Fowl Typhoid

Fowl typhoid is a septicemic disease of domesticated birds. The course may be acute or chronic.

Cause

- ✓ *Salmonella gallinarum.*

Signs & symptoms

- ✓ Diarrhoea.
- ✓ Depression.

Treatment

- ✓ Sulphadiazine/trimethoprim @ 15-30mg/kg IM twice daily for 5 days **OR** Tetracycline HCL @ 5g in 4.5 litres of drinking water for 7 days.
- ✓ During the treatment birds should be given only the medicated water.

Prevention & Control

- ✓ Good management practices.
- ✓ Vaccination.

14.2.24 Pullorum Disease

Pullorum disease is an infectious disease of avian species caused by Salmonella pullorum. The disease is most commonly spread by true egg transmission. It usually occurs in an acute systemic form in chicks and poults but in adults is most often localized and chronic.

Cause

- ✓ *Salmonella pullorum*

Signs & symptoms

- ✓ Hatchability may be decreased.
- ✓ A few of the newly hatched birds appear weaker or die soon.
- ✓ Morbidity and mortality begin to increase around the 4th or 5th day.
- ✓ Sleepy and weak.
- ✓ Anorexia.
- ✓ White adherent diarrhoea with pasting of the vent.
- ✓ Huddling near the heat source and chirping.
- ✓ Stunted or poorly feather.

Treatment

- ✓ Amoxycillin trihydrate @ 10mg/kg Oral for 3-5 days **OR** Sulphadiazine/trimethoprim @ 15-30mg/kg IM twice daily for 5 days.

Prevention & Control

- ✓ Good management practices.
- ✓ Only eggs from flocks known to be free of Pullorum disease should be introduced into hatcheries.
- ✓ Fumigation of incubators & hatchers with formaldehyde.

14.2.25 Histomoniasis (Black head disease)

It is a protozoan disease mainly affecting turkey and also affects other bird species such as chicken, peafowl, pheasant and game birds.

Cause

- ✓ *Histomonas meleagridis*

Signs & symptoms

- ✓ Depression, inappetence and poor growth.
- ✓ Sulphur-yellow diarrhoea and cyanosis of head.

Treatment

- ✓ No drugs are currently approved for use as treatments for histomoniasis.

- ✓ Nitarsone is available for prophylaxis by feed medication. Nitarsone is mixed with the feed at 0.01875% and fed continuously. A 5-day withdrawal period is required for animals slaughtered for human consumption.
- ✓ Nitroimidazoles (metronidazole).
- ✓ Frequent worming of chickens with benzimidazole anthelmintics helps reduce exposure to heterakid worms that carry the infection.

Prevention & control

- ✓ Exclusion of domestic chickens from turkey raising operations is essential, since chickens may harbour large number of egg laying cecal worms.
- ✓ Rearing turkey indoors.

14.2.26 Chronic Respiratory Disease (CRD)

Chronic respiratory disease is caused by mycoplasma and is characterized by respiratory rales, coughing and nasal discharge.

Causes

- ✓ Primary *Mycoplasma gallisepticum.*
- ✓ Secondary infection caused by *E. coli.*

Signs & symptoms

- ✓ Coughing &sneezing.
- ✓ Moist rales and breathing through the partly open beak.
- ✓ Loss in weight gain usually occurs 4 to 8 weeks of age in broilers.
- ✓ Drop in egg production.
- ✓ Sometimes, the eyes are completely or partially closed resulting from severe sinusitis.

Treatment

- ✓ Tylosin+doxycycline powder @ 110mg/kg BW for 5 days **OR** Tetracycline HCL @ 5gm in 4.5 litres of drinking water for 5 days.

Prevention & control

- ✓ Good management practices.
- ✓ Vaccination.

14.2.27 Infectious Coryza

Infectious coryza is an acute respiratory disease of chicken and it may occur in growing chickens and layers.

Cause

- ✓ *Haemophilus gallinarum*

Signs & symptoms

- ✓ Rapid onset and morbidity is high.
- ✓ Feed consumption, egg production or growth is reduced noticeably.
- ✓ Nasal discharge.
- ✓ Conjunctivitis with some adherence of eyelids, ooedema of the face (rarely of the wattles).
- ✓ Respiratory noises and sometimes diarrhoea.
- ✓ In a later stage some birds may have swollen sinuses and or exudates in the conjunctival sac.

Treatment

- ✓ Sulphadiazine/trimethoprim @ 15-30mg/kg IM twice daily for 5 days **OR** Tetracycline HCL @ 5g in 4.5 litres of drinking water for 7 days **OR** Erythromicin @ 20mg/kg BW IM/SC three times a day.

Prevention & control

- ✓ Good management practices.

14.2.28 Fowl Pox

Fowl pox is a common viral disease of domestic birds. It is a slow spreading disease characterized by the development of discrete, nodular, proliferative skin lesions on the unfeathered parts of the body or fibrino-necrotic proliferative lesions in the mucus membranes of the upper respiratory tract, mouth, and esophagus.

Cause

- ✓ Pox-virus

Signs & symptom

The disease occurs mainly in two forms viz wet form and dry form.

- ✓ Wet form: Vesicular nodules occur on skin, small, focal skin lesions on the unfettered parts of the head, usually which enlarge and progress to yellow or dark brown scabs.
- ✓ Dry form: These finally dry off leaving scar tissue at feet, legs and skin on the body-part. The diphtheria form is characterized by small white patches in the pharynx at the sides of the tongue. The lesions coalesce to form large necrotic nodules, which may suffocate the birds.

Treatment and control

- ✓ It is difficult to treat affected birds. The most effective method to control the disease is by vaccination.
- ✓ Tetracycline HCL @ 5g in 4.5 litres of drinking water for 7 days.

14.2.29 Marek's Disease

It is lymphoproliferative disease of chicken characterized by mononuclear infiltration of one or more of the following: peripheral nerves, gonad, iris, various viscera, muscle and skin.

Cause

- ✓ Herpes virus

Signs & symptoms

- ✓ Affects chickens most commonly between 12 and 24 weeks of age.
- ✓ Paralysis of the wings and legs.
- ✓ Severely affected birds are unable to stand.
- ✓ Some may lie on their side with one leg stretched forward and the other back ward.
- ✓ Torticollis can be seen when the cervical nerves are affected.
- ✓ Mortality varies from 5 to 50 % in unvaccinated birds.

Treatment and control

- ✓ There is no treatment for Marek's disease, and vaccination of day-old chicks is in effective method of control.
- ✓ Strict sanitary principles to avoid early exposure of young chickens.
- ✓ Tetracycline HCL @ 5g in 4.5 litres of drinking water for 7 days.

14.2.30 Avian Influenza (Bird flu)

Avian influenza is a highly contagious viral disease, which may cause up to 100% mortality in domestic fowls. The disease affects the respiratory, digestive and or nervous system.

Cause

- ✓ *Orthomyxo-viruses of type A.*

Signs & symptoms

- ✓ These vary from none, to mild to serious respiratory and neurological symptoms with depression and death.
- ✓ Mortality from a few percent to 100%.
- ✓ Decrease in production.
- ✓ Comb and wattle can become cyanotic.
- ✓ Later on oedema, hemorrhagic necrosis can be seen, mainly in the head region.

- ✓ Carcasses can be severely dehydrated.

Treatment & control

- ✓ There is no treatment.
- ✓ Refer AI guideline for control.

14.2.31 Newcastle Disease (NCD)

It is an acute rapidly transmitting viral disease of domestic poultry and other avian species. It is characterized by high mortality, respiratory signs, nervous disorders and sudden drop in egg production.

Cause

- ✓ Paramyxogroup-I virus(DNA virus)

Signs & symptoms

- ✓ In young birds: Birds show respiratory and nervous signs (signs include in co-ordination, opisthotonous, tremor and lameness). Birds excrete watery white feces.
- ✓ In adult birds: Birds will have gasping, sharp drop in the egg production and show haemorrhagic conjunctivitis.

Treatment & control

- ✓ No specific treatment.
- ✓ Sanitary and hygienic measures.
- ✓ Vaccination.

14.2.32 Infectious Bursal Disease (IBD)

It is an infectious and immunosuppressive viral disease of young chickens that has lymphoid tissue as its primary target with a special predilection for the bursa of Fabricius.

Causes

- ✓ Birna-virus

Signs & symptoms

- ✓ Disease of susceptible young chickens, generally 3 - 6 weeks old.
- ✓ Severe depression.
- ✓ Whitish watery diarrhoea.
- ✓ Soiled vent feathers.
- ✓ Anorexia.
- ✓ Trembling and in coordination.

- ✓ Inflamed vents and vent pecking.
- ✓ Ruffled feathers.
- ✓ Losses vary and can reach a 5 - 50 % mortality of chickens aged 3 - 6 weeks old.

Treatment & Control

- ✓ No therapeutic treatment.
- ✓ Sanitary precautions as applied to prevent the spread of infections.
- ✓ Proper vaccination has to be done to develop immunity.

14.2.33 Infectious Bronchitis

It is an acute, highly contagious viral respiratory disease of chickens characterized by tracheal rales, coughing and sneezing.

Causes

- ✓ Corona-viruses

Signs & symptoms

- ✓ Coughing, sneezing, rales, nasal and ocular discharge. There is weakness, depression and huddling near the heat source.

Treatment & control

- ✓ No specific medical treatment for to kill IB-virus. So, control depends on a good immunity by vaccination.

14.2.34 Infectious Laryngo-Tracheitis (ILT)

It is an acute disease of chickens characterized by signs of respiratory depression, gasping, and expectoration of bloody exudate.

Causes

- ✓ Herpes virus

Signs & symptoms

Acute infection:

- ✓ Nasal discharge.
- ✓ Moisty rales followed by coughing and gasping.
- ✓ Bloody mucous from nostrils and mouth.
- ✓ High morbidity and considerable mortality are common.

- ✓ Mortality as high as 50% - 70% has been reported, but mortality usually is in the 10% - 20% range.

Mild forms:

- ✓ Drop in egg production.
- ✓ Watery eyes, (bloody) conjunctivitis.
- ✓ Swelling of sinuses.
- ✓ Persistent nasal discharge.
- ✓ Morbidity may be as low as 5%.
- ✓ Generally the course of the disease varies with severity of the lesions and most chickens recover in 10-14 days, but extremes of 1-4 weeks.

Treatment & control

- ✓ No specific medical treatment.

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