

THE UNIVERSITY OF NEW ENGLAND ANIMAL ETHICS COMMITTEE (AEC)

STANDARD OPERATING PROCEDURES FORM

(For Domestic Fowl, Native Fauna/Wildlife, Domestic Livestock & Laboratory Animals)

Title of Procedure:

L15 - Management of cattle health and disease in Tullimba

Objective:

The feedlot cattle health program **key focus is on maintaining or improving health**, not just treating diseases. The health program is 'preventative' in nature, minimizing stressors and exposure of cattle to disease or disease situations. A comprehensive program is created with rational and practical application versus reactive response. The veterinary therapy program is an essential part of the overall cattle health program for it reflects the primary disease, incidence rate, staff requirement and additional cost to customer or feedlot.

Details of Procedures:

This is not a single procedure but a management guidance document to (a) prepare the staff, facility and animal handling facility to minimise ill health and (b) to appropriately recognise and treat disease when it occurs, thereby minimising impact on animal welfare and performance

CATTLE HEALTH PROGRAM

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1. Health Objectives:

The feedlot cattle health program **key focus is on maintaining or improving health**, not just treating diseases. The health program is 'preventative' in nature, minimizing stressors and exposure of cattle to disease or disease situations. A comprehensive program is created with rational and practical application versus reactive response. The veterinary therapy program is an essential part of the overall cattle health program for it reflects the primary disease, incidence rate, staff requirement and additional cost to customer or feedlot.

2. Stockperson:

The 'stockperson' nature must be observant, 'skilled through practice,' use common sense, reliable and consistent in actions. The earlier sick cattle are identified and treated the better and more rapid the recovery rate, lowering production loss of that animal. Cattle entering the feedlot are 'tired and ugly' to some degree, it is the stockperson skills to differentiate disease versus non-disease cattle under stress. These individual's daily decisions are important to cattle health for the feedlot.

The number of 'stockpersons' are limited to a specific number of pens or rows to maintain consistency in activity. Weekend (i.e. approximately 29 % of week) inconsistencies can be costly to feedlot.

Stockperson Actions:

On horse or foot the stockperson must first *observed all cattle within the pen* prior entry to the pen. This critical action of undisturbed cattle observation prior pen entry provides a good mental image or mental preparedness for stockperson to preference and concentration on viewing position/posture of individual and groups of cattle within a pen. If a dead animal is found in the pen first remove sick cattle from pen. A post mortem is the remaining stockpersons attention given to a dead animal.

The following are several examples of different unnatural posture and physical appearance or symptoms:

Unnatural Posture	System
Head/neck extended, level with back	Respiratory
Extended leg stance, front & rear	Respiratory, Digestive, Reproductive
Dog sitting position	Respiratory
Legs contracted under body 'tucked up'	Digestive
Body wt displaced to side or quarter	Musculoskeletal
Walking aimlessly or no intent, stagger gait	Neurological
Arch back & elevated tail	Reproductive
Mounted by other cattle	Bulling
Rubbing on fence or water trough	Parasitism

Unnatural Appearance or Signs	System
Open mouth breathing, panting, coughing	Respiratory

Clear to colour mucus from nasal passage	Respiratory
Crusted or scabbed nasal area	Respiratory
Puffy eyes	Respiratory
Excessive salivation from mouth	Respiratory, Digestive
Head & ears down	Respiratory, Digestive
Sunken eyes	Digestive
Hollow – area between last rib & rear hip indented	Digestive
Swelling of hoof or leg	Musculoskeletal
Holding 1 leg off ground – limping	Musculoskeletal
Head tilt, aimless movement to staggered gait	Neurological
Excessive tearing of eyes	Neurological
Hair loss through rubbing on objects within pen	Parasitism

The stockperson is to enter the pen and make cattle move or get to feed slowly by entry and exit of their flight zone. The walking pattern the stockperson uses for a pen is determined by stocking density. If pen is stock to maximum density a good walking pattern would first include the entire perimeter followed by zigzag pattern through middle of pen. The purpose of this action is to observe the entire animal at rest and in motion. Minor lameness will not be observed unless cattle are made to move.

Concentrate on 'cattle', not their manure. Manure physical appearance will change proportionally with feed intake and caloric density of the feed.

After completing cattle observation within pen and sick cattle identified cattle these cattle are cut out from others and moved through the pen gate. Removing sick and non-sick cattle in a group may be required to complete action with low disturbance to the pen.

Cattle are moved slowly to hospital or treatment facilities for system diagnosis and treatment. The stockperson that identified and moved sick cattle for medical therapy is either directly or part of the team that treats the sick animals.

3. Supportive Care:

Nutrition = Water and Feed/Energy

"Sick cattle don't eat, and cattle that don't eat get sick"

- Sick animals are dehydrated and calorie deficient
- Accessible volumes of clean drinking water as well as highly palatable feed (finisher ration) is required to assist animal convalescence through re-hydration and feed/energy for weight recovery
- Never underestimate importance of water or feed in reducing animal stress or convalesces

Cattle identified by symptoms as being sick are immediately removed from home pen and placed in a designated hospital pen for initial medical treatment and observation until recovery. This pen must possess adequate volumes of clean water and provided fresh finisher ration daily. Hospital water

trough is best cleaned on a daily to every other day schedule to remove discharge contaminated materials.

Hay does not contain adequate energy density for rapid health recovery and if consumed does fill rumen making cattle appear full. Sick cattle have a low feed intake and are best fed a high energy ration to compensate for maintenance energy requirement as well as weight recovery.

4. Treatment Card

Cattle displaying unnatural posture or unhealthy symptoms are removed from pen and treated. These cattle symptoms are recorded on their individual treatment card. The treatment card may be a physical card or individual animal computerized record system. These cards are used as financial (i.e. charges against specific lot) and functional (i.e. disease, incidence, medication efficacy, medication withdrawal period) records for owners of cattle and/or feedlot. The purpose of a treatment cards over a specified time period is to record actual number of sick cattle, identify symptoms of disease, days on feed symptoms observed, medication administer, medication efficacy (i.e. how well it works or not) and medication withdrawal time period.

Medicated cattle are given a unique hospital ear tag for easy identification during therapy period as well as to insure drug withdrawal time period has passed. The treatment dates are written on tag to assist in identifying time period in hospital pen as well as a guide for medication withdrawal period.

Example of treatment card:

Date	/ /	Lot #		Ear Tag #	
Symptom	Respiratory	Lameness	Digestive	Reproductive	Nervous
	Buller	Miscellaneous			
Hosp Day	0	1	2	3	4
Severity					
Hi – Mod-Lo					
Alertness					
Hi-Mod-Lo					
Temperature					
Discharge					
Swelling					
Medication					
1 & ml					
Medication					
2					
& ml					
Comments					
Signature					

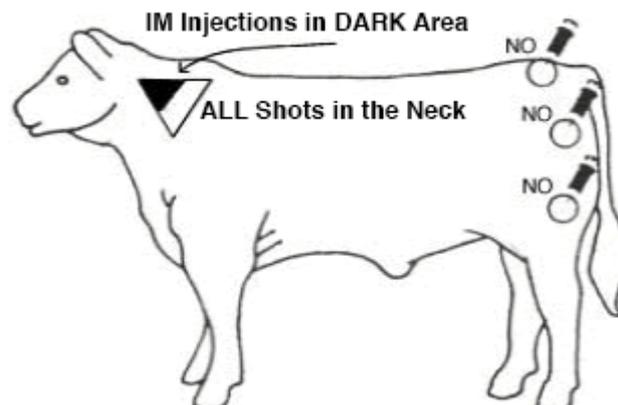
5. Administration of Medication

Different medication has different routes of administration. The following are abbreviations within definition and description.

Abbreviation	Definition	Description
IM	Intramuscular	Penetrate neck muscle
SC	Subcutaneous	Under skin of neck – Tent technique
IV	Intravenous	In jugular vein
Oral, Per os	In mouth	Drench into mouth or esophagus
Topical	On surface	On skin or mucus membrane

Injecting medication or vaccination either as intramuscular IM or subcutaneous SC, the neck regions is the anatomical target. The neck region landmarks are outlined in the injection zone triangle shown below. All injections should be given in the neck region, never in the rump or back leg.

Injectons in DARK Area ALL Shots in the Neck



Administration of more than 1 injection on the same side of the neck, the other injection sites are at least 100mm (4in) apart (e.g. one handbreadth between the two sites). Spacing injections allows better absorption and less interaction between products; spacing 25-50mm apart essentially creates one big site.

Always follow proper volume-per-site instructions. When injecting antibiotics, never exceed more than 10ml per injection site.

6. Needle Selection & Use

Needle selection and care are essential to quality assurance. When choosing the proper needle for administering the medication, keep the following facts in mind.

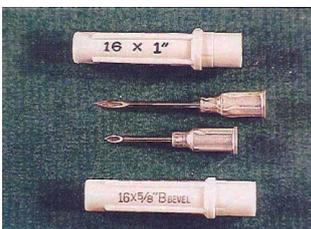
- When possible, use products that can be administered subcutaneously because they cause less damage to the carcass.
- Needle length for subcutaneous infections is not to exceed 20mm (3/4in). Many intramuscular injections can be completed with a 25mm (1in) needle.
- The feeling resistance as the needle penetrates the hide, requires assessing needle for barbs and may be time for a new needle.
- A 16ga. needle is the maximum size for intramuscular injections. An 18ga. needle may be used for administration of some products, but proper

restraint becomes more important to avoid bending and possible breakage of these small needles.

- Always discard bent needles, and never straighten and reuse them due to possible breakage.
- When injecting SC subcutaneously, use the “tenting method” of injection shown below. This method ensures that the product is delivered under the skin and keeps it out of the underlying muscle tissue.



- Injection-site swelling can sometimes occur from injecting a subcutaneous product too deep and penetrating part of the first layer of muscles. If this occurs, consider using a “B-bevel” 5/8-inch needle or a short (1/2 or 3/4 inch) regular bevel needle. The injection point on the B-bevel needle is shorter than a regular injection needle (photo below).



- All used needles are to be disposed of in purpose built biohazard container.

7. Syringe Care

Cleaning of multiple-dose syringes pistol-grip style syringes is critical to maintain sterility and when not localized infections become common at the injection site.

Keep the outer surface of the syringe clean, use dish soap, water and a brush. Never use a detergent soap or a disinfectant on the inside of the syringe barrel. Detergents and/or disinfectants leave a small amount of residue that cannot be rinsed away. Using a syringe with a small amount of residual disinfectant and filling with a modified-live vaccine, de-activates the vaccine. Proper care for the inside components of a multiple-dose syringe requires rinsing with boiling water. This is accomplished by drawing water that is greater than 82°C (180°F) into the syringe and squirting it out. Distilled water can easily be heated in the microwave to rinse the syringe. Three to five rinses should be adequate. Remove the water and let the syringe cool before using.

Syringe contamination is prevented by storing in a dust-free environment. By placing the syringe in a zip-lock bag and storing it in the freezer, you will avoid the possibility for mould or mildew that could occur inside the syringe. Warm the syringe to room temperature before use.

8. Protecting Medicated Products Integrity

Attention to sterility of the product container and to sanitation of syringes and injection systems is critical. The rubber stoppers in the product bottles tend to dull needles very quickly. It is best to use an unused sterile "filling" needle left in the stopper while the product is in use. When pulling up product into a multi-dose syringe, only use the filling needle that has been left in the stopper to fill the syringe. This ensures sanitation of the product container, lowering possibility of contaminating the bottle by a used needle. It is important to never mix multiple containers of products into one bottle. Always remember to read the manufacturer's recommendations for dosage, route of administration, withdrawal period and expiration date.

9. Storage Facilities for Medication

Provision of a facility specifically set for storage of cattle medication improves medication effectiveness and reduces treatment errors. The ideal location for a storage unit is a clean, dry, frost-free area such as a feedlot hospital facility or office utility room. The storage unit should protect products from changes in temperature, sunlight, dust, moisture, animals and insects.

Products are to be protected from temperature extremes and fluctuations as these may alter the products' chemical structure and reduce potency, shelf life and safety. Vaccines containing modified live organisms will have markedly reduced effectiveness if stored at room temperature.

Most antibiotic preparations are heat sensitive. Store these products in a refrigerator at a temperature between 2° and 8° C to maintain potency. Many other products require storage in a cool (below 15° C) but non-refrigerated location. Product labels will indicate an acceptable storage temperature. Product decomposition may result from exposure to light. Manufacturers package light sensitive products like the injectable tetracyclines in light resistant containers such as coloured glass bottles. This reduces the loss of potency due to light. Store these and other products in a light proof storage unit.

To prevent treatment errors, store antibiotic products on separate shelf from other medication in the storage unit. Label the shelves to help maintain an organized storage unit. Store products other than antibiotics, such as injectable thiamine (B1) vitamin, on a third shelf along with needles and other instruments used in the treatment of animals.

Separate storage cabinets for each group of products will further reduce the chance of errors in product selection. Lock storage units to prevent access by children or unauthorized persons.

10. Managing Medication Inventory

Careful management of the drug inventory on the feedlot insures that drugs are purchased as needed. Fresh supplies will be readily available when needed. This will reduce costs resulting from drug wastage. Anticipation of a time of increased drug use may allow the producer to take advantage of sales while insuring supplies are on hand.

The drug inventory on the feedlot can be managed using the following procedures:

- purchase drugs in quantities which will be used in a reasonable amount of time;
- check product expiry dates before purchase;
- clean and reorganize the drug cabinet regularly;
- use products with older dates first; and
- discard all expired products.

Medication Inventory Records

Date	Supplier	Product Name	Quantity	Lot#	Serial#	Expiration Date

11. Disposal of Medication

Safe disposal of livestock medicines is essential to protect feedlot employees, untreated livestock and the environment from accidental exposure to potentially hazardous chemicals.

Expired livestock medicines can be disposed of by returning them to the supplier. Or dispose of through approved or acceptable biohazard procedures for your region.

Cattle anti-parasiticide products, such as injectable and topical wormers, are pesticides. Dispose of these products like pesticides applied to crops. A good rule for disposal of all livestock medicines is to rinse all empty containers and used equipment thoroughly. The three rinse system recommended for pesticide containers is suitable.

Do not reuse livestock medicine containers. Puncture all non-aerosol containers to prevent their reuse. Store containers to discard, preventing access to non-staff.

12. System - Disease

Veterinary therapy is conducted through treating observed symptoms displayed by sick cattle. Categories of observe symptoms are listed by respective anatomical and physiological system.

Respiratory Tract

Bovine Respiratory Disease complex (BRDC) is one of the more common occurring infectious diseases in Australian feedlots. BRDC is a common occurrence for cattle exposed to combination stressors (physical & psychological) and/or viral infection in presence of pathogenic bacteria. When environmental temperatures fluctuate greater than 17°C within 24 hrs a great amount of physical stress is imposed on cattle. Reducing stressors is the most important key in managing BRDC problems.

Respiratory diseases initial tissue invader may be found as a single or combination of viral diseases. Viruses produce disease as well as predispose cattle to other infectious agents via immuno-suppression. These diseases invasiveness may be suppressed through previous development of antibodies either through pre-exposure from other cattle or vaccination program.

Viral diseases do not respond to antibiotics, yet can be given antibiotics to suppress concurrent bacterial development. Bacterial disease invasion may be worsening cattle appearance. Viral diseases produce disease as well as predispose animal to other infectious agents. They predispose animal to

disease situations via immuno-suppression and/or tissue destruction. Minimize incidence through pre-exposure via vaccination for specific virus.

Viral Disease Symptoms

- Nasal discharge of clear mucus, thin strings
- Open mouth breathing
- Dehydration
- Hollow appearance, not eating
- Moderate to no movement within pen

Common viral diseases:

- Infectious Bovine Rhinotracheitis (IBR) is a viral respiratory disease & potent initiator for BRDC. Also referred to as Red Nose. Virus attacks mucosal lining with characteristic hemorrhagic lesions involving trachea, nasal passage, nose & eyes. Symptoms include clear mucus discharge (no significant bacteria involvement), poor posture (standing), persistent cough, high morbidity/low mortality.
- Bovine Viral Diarrhoea (BVD), Bovine pestivirus or mucosal virus disease attacks different tissues and systems. It is rarely seen in Australia, with most pestivirus infection going unnoticed. When seen, signs include a transient fever, a depressed "hollow" appearance, diarrhoea and sometimes a cough. Bovine pestivirus is capable of crossing the cow's placenta and infecting the developing foetus. If cows lack immunity to pestivirus and are infected while they are pregnant, the virus can damage the foetus. Cows that have immunity to pestivirus from previous exposure can block this passage and protect their foetus.

Bacterial diseases respond to antibiotic therapy.

Bacterial Disease Symptoms

- Nasal discharge of white to off white mucus (mucopurulent), thick strings
- Open mouth breathing
- Dehydration
- Hollow appearance, not eating
- Low movement within pen
- Standing still, stretched out
- Fever +41°C

Common Bacterial diseases:

- Mannheimia (Pasteurella) haemolytica is a principal pathogen associated with a majority of BRDC cases. Opportunist that is severe, rapidly developing and highly pathogenic. Produces exotoxin, damages neutrophils and alveolar tissue - lung tissue damage in front lobes. Fever, mucopurulent nasal discharge (bacterial involvement), loss of feed intake and poorly reversible pneumonia.
- Pasteurella multocida is commonly found with BRDC pathogen, not as severe as M. haemolytica. Found more so in pasture cattle that develop pneumonia and in slower or chronic forms of BRDC.
- Haemophilus somnus associated with brain infection Thromboembolic-meningoencephalitis TEME, joint swelling and lameness. Symptoms - harder to detect, more rapid onset than Pasteurella spp, ataxia, knuckling, sudden death.

- Actinobacillus Pyogenes Opportunistic bacteria that invades after M. haemolytica or P. multocida has caused initial tissue damage. Common finding in chronic pneumonia cases and often reason of treatment failure

Respiratory Medication Considerations

The antibiotic and supportive therapy selected for treatment of a specific animal is dependent upon severity of symptoms exhibited. The less medication maintained within a feedlot the better inventory and expiration dates are controlled.

Never underestimate the requirement of water and electrolyte of cattle. Cattle severely dehydrated will benefit from oral drenching of 20-40l of electrolytes. Dehydrated cattle have limited ability to metabolize and distribute medication throughout the body. Antibiotic are sometimes thought to have failed when dehydrated curtailed metabolism and distribution in the body.

Cattle with high fever are reluctant to consume water or feed. These cattle are best administered with a non-steroidal anti-inflammatory (i.e. flunixin meglumine) to reduce pain and enhance water/feed consumption.

The antibiotic selected is best based severity of disease, medication activity period (i.e. 24-72hr) and withdrawal period to complete for specific market. Handling sick cattle for repeated treatments increases stress as well as increases labour cost.

Medication is listed for based on severity of symptoms in Veterinary Therapy.

Other Respiratory Diseases

Acute Bovine Pulmonary Emphysema and Edema, Fog Fever or Atypical Interstitial Pneumonia is a respiratory disease without viral or bacterial infection. Symptoms - Rapid onset 18-24 hrs, severe respiratory distress causing edema/emphysema. Associated with feed containing 3-methylindole, moldy feed products, toxic plants. Observed primarily during periods of heat stress, + 60 DOF, heifers 3 times more susceptible than steers; poorly understood disease. Treatment is limited in not exciting animals, supportive therapy flunixin meglumine, recommend emergency slaughter.

Anaphylaxis Reaction (type 1). Symptoms - rapid onset, labor breathing (e.g. laryngeal edema, bronchial constriction), profuse salivation, rapid heart rate, nervous signs, diarrhea/cramps, skin (hives, urticaria). Treat: IV or IM epinephrine, followed by corticosteroids. Identify antigen source such as injectable vitamins (esp. ADE), vaccine, penicillin, feed source (foreign protein meal) to avoid.

Digestive Tract – Infectious Diseases

Coccidiosis is caused by Eimeria bovis or E. zurnii is characterized by bloody scours (i.e. bright red blood in feces from SI & caecum). This disease is associated with younger cattle or stressed animals initiated onto feed, yet can occur in mature bullocks. Coccidiosis predisposes animals to other infectious diseases scenarios such as pneumonia and salmonellosis.

Treatment of severe case with injectable trimethoprim/sulfadimidine. Pen feed treatment use ionophores - monensin or lasalocid.

Salmonellosis - Salmonella typhimurium and S. Dublin is characterized by watery and fetid odor feces, bloody scours, depression, febrile, septicemia. Generalized infection manifested as nervous and respiratory symptoms. This disease can be contracted by man or is zoonotic.

Treatment is with injectable trimethoprim/sulfadimidine, ceftiofur, oxytetracycline. Supportive therapy includes drenching oral electrolytes (10 % BW) and flunixin meglumine.

Enterotoxaemia is caused by Clostridium perfringens type D and characterized by sudden death in feedlot cattle. Occasionally scours or nervous symptoms. Bacteria proliferates in upper small intestine in presence of large quantities of readily fermentable carbohydrates, liberating toxins which affects nervous system. Immunization at prior entry or at processing with Clostridium perfringens.

Digestive Tract – Nutritional

Dry bloat is accumulation of 'free gas' often created by mechanical obstruction and treated by passing stomach tube.

Bloat is distension of rumen secondary to buildup of gas - excessive gas creates pressure on heart/lungs, yielding respiratory distress.

Frothy bloat is gas trapped in bubbles of feed within rumen, froth covers opening of esophagus into rumen, associated with type of feed (grain ration)

Treatment of severe bloat requires drenching or tube with oil or surfactant. Never drench cattle with bicarbonate for this forces acid and toxins into body (i.e. paradoxical acidosis). On a pen basis feed intermediate or hay rations. Bunk management requires improvement is a large percentage of cattle within pen are affected.

Acidosis occurs with excessive buildup of lactic acid within rumen or loss of bicarbonate ion causing hydrogen ions shift to blood eliciting symptoms. Concomitant ingestion of readily fermentable carbohydrates with insufficient rumination/saliva production - poor feed bunk management. Symptoms include increased respiration rate, diarrhea, bloat, grinding teeth, fluid distension of rumen, staggering, dehydrated, hemoconcentration, urine pH < 5.5, rumen content < 4.5 (?).

Digestive acidosis generalized symptoms can be confused with polio PEM, urolithiasis, and peritonitis.

Treatment of severe cases requires intravenous administration of 5 % sodium bicarbonate 1l and flunixin meglumine. DO NOT DRENCH OR FEED SODIUM BICARBONATE (e.g. hydrogen ion shift from rumen fluid to blood). Dehydration may be corrected with drenching oral electrolytes. On a pen basis cattle are fed feedlot hay ration (hay length 100 mm) for stimulation of saliva production and to assist rumen recovery.

Musculoskeleton System - Infectious

Blackleg is caused by *Clostridium chauvoei*. Symptoms include gas formation in muscles causing inflammation (i.e. creepy skin feeling), associated with sudden death.

Treatment is not found to be successful because of rapidness of disease. Preventative therapy is through previous immunization on farm and at processing with *Clostridial* species vaccines (e.g. 5 in 1).

Footrot/lameness is an infection that occurs secondary to break in integrity of either hoof or adjacent skin. Symptoms include inflammation of cleft between claws, progress to pastern joint involvement, initially unilateral lameness that may progress (one or more legs involved). Primary bacterial invader is *Fusobacterium necrophorum*. Associated with wet weather, poor ground base (rocks), long transport of new arrivals .

Treatment may be topical with foot bath or spray (i.e. 5 % formalin or 2 % copper sulfate). Antibiotic therapy includes injectable penicillin or oxytetracycline.

Musculoskeleton System - Nutritional

Founder/lameness is caused by disruption of hoof wall growth through secondary incidence of metabolic acidosis or septicemia. Symptoms observed includes bilateral, fore and/or hind hooves, animal reluctant to move and does so by walking on posterior aspect of hoof, disrupted elongation of hoof wall eventuates over time. Cattle initially exhibit transient lameness for 1-3 day with toxic insult to body. Commonly occurrence in cattle possessing slender leg bones structure creating poor blood circulation (esp. Brahman).

Treatment concerns enhancing cattle performance for remainder of feeding period. These cattle are best placed in a small pen with ready access to water and feed.

Nervous System - Infectious

Thromboembolic-meningoencephalitis (TEME) is caused by bacteria *Haemophilus somnus*. Symptoms may include singular nervous signs (i.e. dummy response to stimuli) or in combination with respiratory pneumonia and lameness/swollen hind joints. Sudden death is not unusual occurrence for these cattle.

Treatment requires a highly active antibiotic that can penetrate blood-brain barrier including oxytetracycline, ceftiofur, tilmicosin or florfenicol.

Infectious keratoconjunctivitis (Pinkeye) primary bacteria isolated is *Moraxella bovis*, yet multiple factors (i.e. prolonged exposure to ultraviolet light, physical irritation by insect & dust, concurrent infection) can cause eye infection.

Treatment alternatives range from oxytetracycline topical ointment (treat both eyes regardless if only one is affected), subconjunctival injection of penicillin, IM injection of long acting antibiotics such as oxytetracycline 72hr apart. When deep or perforating ulcers are observed an eye patch is recommended.

Nervous System - Nutritional/Metabolic/Toxic

Polioencephalomalacia (PEM) is caused by a deficiency, binding or destruction of thiamin (B1). Disease is associated with change of diet or feedstuff (esp. silage source), high sulfur concentrations in feed or water/low copper concentration. Symptoms include sudden onset of nervous signs, blindness, uncoordinated to convulse, and sudden death.

Treatment is with injectable thiamin, rapid recovery response (30 min).

Reproductive System

Calving

Heifers arriving pregnant at feedlot represent potential significant economic loss through death, poor performance and low carcass weight gain. Symptoms include dystocia requires calf removal (poor option - cesarean section) with possible retain placenta, uterine infection and posterior paralysis.

Treatment is avoidance through rectal palpation which is the most economical method of detection. Avoid heifers when fetus is greater than 3-4 months; aborting requires time & increases secondary problems (e.g. retain placenta, dystocia, etc).

Down heifer is to be moved if possible to area to allow water and feed intake. If unable to rise within 24hr salvage is best option.

Vaginal Prolapses

Vaginal Prolapse of heifers can occur as primary event or in combination with:
1 - normal cyclic ovarian activity,
2 - feed source,
3 - hormone growth promotant HGP, exceeding heifers estrogen tolerance threshold

It may also be secondary complication of pregnancy, calving, scouring or bloat.

Treatment includes removal HGP and/or remove suspected feedstuff. Reduction and surgical repair are warranted on severe cases.

Prepuce Prolapses

Prepuce Prolapse of a steer can occur as primary event or in combination with:
1 - mechanical trauma,
2 - hormone growth promotant HGP, exceeding steers estrogen tolerance threshold

Associated among breeds (esp. Brahman and crossbred) and within breeds (i.e. sire genetic lines).

Treatment is removal of HGP and reduction of swelling with corticosteroid and antibiotic to reduce infection. Prevention is through delay of HGP administration 20 - 30 days for steers entering with low body fat.

Rectal Prolapses

Rectal Prolapse of heifer or steer is associated with increased abdominal pressure, rectal irritation or straining with constipation or diarrhea, secondary to heifers with prolapse vagina.

Treatment consideration is immediate salvage versus reduction or surgical repair.

Waterbellies

Urinary urolithiasis (2 types) urethral obstruction found as silicious calculi from grazing grasses high in silica, signs observed early in feeding period. Phosphatic calculi occurs later in feeding period. Associated with early castration (small urethra) and/or dietary anion/cation imbalance. Commonly observed with poor water quality (high pH) and/or high bicarbonate concentration in water or feed.

Treatment of severe case includes surgical repair. On a pen bases increasing urination through clean volumes of available water is required.

Miscellaneous Problems

Bullers

Bullers (common type) are the steers that are ridden by other animals within pen inflicting mechanical trauma (e.g. haematomas on rump/ tail, bruising, swelling, lameness). These cattle are ridden to exhaustion, lay down and are trampled to death by others within pen. It is not common for male cattle to stand to be ridden by others.

The syndrome is viewed to be a socialization or 'peck order' problem. It is commonly associated with initial viral infection, hormone growth promotant HGP, changes in environment (humidity), restricted caloric intake (hungry cattle) - 3 H's.

Treatment is removal of buller to common pen or placement of 'buller cage' in pen. Cattle feed through self-feeder are rarely observed to exhibit activity.

Parasites

Gastrointestinal (Worms)

Cattle enter with parasite load, and not re-infection in feedlot. Common parasites include: Haemonchus, Bunostomum, Oesophagostomum and Cooperia. Problem for calves entering feedlot, immuno-suppressive and tissue destruction. Symptoms include poor/rough hair coat, diarrhoea, and submandibular oedema (bottle jaw).

Treatment is with an anthelmintic for young calves at processing, whereas older cattle prophylactic therapy is questionable. Compounds include fenbendazole, doramectin, and ivermectin. Injectable and oral drench anthelmintics possess superior efficacy over topically applied compounds.

Flukes

Cattle entering the feedlot with fluke load, Fasciola hepatica have a damaged liver. Marginal to severe fluke load severely suppresses production. 'No Liver = No Engine = No Growth.' Symptoms are not readily discern, weak, anaemic, ill

thrifty and fail obtaining high feed intake. High risk cattle are from wet land regions because of snail habitat.

Treatment once in feedlot is questionable, damage has already been done. Destroying immature migrating and adults with flukicide can be completed, however production benefit may be marginal at best.

Ticks

Cattle primarily enter feedlot with ticks (e.g. *Boophilus microplus*). Ticks are a serious problem for the cattle industry because of direct and indirect influences. Direct influence (tick worry) causes anaemia and poor performance. Indirect influence (tick fever) is through transmission of blood parasites (e.g. *Babesia* & *Anaplasma*) causing anemia, overall physical depression and susceptibility to other diseases.

Treatment objective is to destroy ticks, via dip/spray/pour-on (e.g. amitraz, cypermethrin, doramectin, ivermectin). *Babesia* and *Anaplasma* are best treated with long acting injectable oxytetracycline. Feed medication is questionable because it is dependent upon a minimum consumption to obtain therapeutic levels.

Lice

Lice classification is based on anatomical region found on cattle. *Damalinea bovis* is a biting louse (head/neck/shoulders). *Haematopinus eurysternus* is a short-nose sucking louse. *Longnathus vituli* is a long-nose sucking louse (calves - neck/rib/back). Symptoms include cattle rubbing objects in pen, developing ragged, rough coat, with massive hair loss and skin damage. The primary influence on cattle production is the increase stress caused by irritation increases maintenance energy requirement.

Treatment is at induction or processing as in treatment for ticks, treating animals on feed question because of chemical residue (withdraw period). Licacides includes deltamethrin, cypermethrin, and doramectin.

Flies

Haematobia irritans (Buffalo fly), *Musca domestica* (house fly), *Simuliidae* (Buffalo gnat), are some of the more common flies found in feedlots. The Buffalo fly causes irritation and skin lesion, other biting/suck flies/gnats presence in large numbers disturbs cattle. Symptoms include disturbing cattle in pen, decreases feed intake, causes excessive tail switching and cattle bunching increasing energy expenditure.

Treatment concerns decreasing habitat around feed pens (cut grass and remove spoiled feed), processing as in treatment for ticks, insecticide around pen and road side of feed bunk, avoid treating animals once on feed because of chemical residue.

Heat Stress

Occurs when Environmental conditions (temperature/humidity/air currents) exceeds animal ability to maintain body temperature. Symptoms includes excess panting, loss of saliva, crowding at water trough, and seeking air current.

Supportive therapy is to keep cattle ruminating on feed, nutrient concentrations considerations includes roughage (14 - 17 % DMB), potassium (1.0 - 1.2 % DMB) and salt (0.2 - 0.3 DMB). Increase the number of water troughs in pen to spread animals out (increase air convection within pen). Move cattle when cool, avoid curfew (induced stress).

Drug, Chemicals or Biological Agents:

Advice on appropriate veterinary pharmaceuticals is provided under each health issue in the preceding sections or a veterinarian may be consulted in the case of a disorder not addressed in this document and not available in the veterinary storage of the feedlot.

Care of Animals after the Procedure:

All details of animals to which a veterinary product has been administered must be noted in the feedlot notebook. Most cattle requiring intervention will be placed in the hospital pens where stocking density is less and individual attention and observation can be greatly increased.

Qualifications, Experience, Skills or Training Necessary

Managing cattle health is the responsibility of all feedlot workers and visiting researchers and students. Any observation of poor management or ill health of stock should be reported to the Feedlot Manager, who is routinely responsible for health and management of stock in the feedlot and is most able to make decisions based on previous experience and due feedlot process.

Effects of Procedure on Wellbeing of Animals:

All the above described animal and disease management strategies are directed to maximise the wellbeing of cattle within the feedlot

Pain Relief Measures:

Any use of chemical pain relief (anaesthetics, analgesics, anti-inflammatory compounds) are only to be conducted after consultation with the Feedlot Manager to ensure no feed safety, slaughter intervals or other export requirements are being infringed. Any use of these agents as a routine part of the approved research project (other than a response to unexpected disease) would need the procedure to have been included in the AEC submission.

References:

N/A

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