**Disorder:** Abortions

**Prevention:** There are many infectious causes of abortion including the viruses of infectious bovine rhinotracheitis (IBR) and bovine viral diarrhea (BVD), the bacteria of brucellosis, vibriosis and leptospirosis, and the protozoans of trichomoniasis and neosporosis. Prevention is directed against the specific causes of abortion and discussed under the specific diseases.

**Indications for Treatment:** Small, sometimes hairless calves expelled before term, calves born dead (stillbirths), or weak calves.

**Disorder:** Acute Bovine Pulmonary Emphysema (Fog Fever)

**Prevention:** Avoid a sudden change from a low to a high plane of nutrition (lush pasture). Place cattle on a transition diet for 2 to 3 weeks when changing from a low to a high plane of nutrition. It helps to feed 2 to 3 pounds of poor-quality hay or straw when the cattle are placed on lush pasture.

**Indications for Treatment:** Mainly adult cattle 4 to 10 days after introduction to lush pastures: sudden deaths or severe difficulty in breathing. Affected animals have heads extended and open-mouthed breathing with expiratory grunts.

**Disorder:** Anaplasmosis

**Prevention:**
1. Vaccinate cattle moved from area free of anaplasmosis into an anaplasma area.
2. Control insect vectors - horse flies.
3. Wash surgery instruments between animals - don’t inject multiple animals with same needle.

**Indications for Treatment:** Depression, fever, loss of appetite, weight loss, pale or yellow mucous membranes. Some cows may abort or show aggression.

**Disorder:** Anthrax

**Prevention:** Vaccinate in high-risk regions of Texas with Stern-strain spore vaccine. Anthrax is an annual threat in a triangle bounded by Uvalde, Ozona and Eagle Pass. This area takes in portions of Crockett, Val Verde, Sutton, Edwards, Kinney, Uvalde and Maverick counties.
**Indications for Treatment**: Sudden death or severe depression, fever, difficult breathing, diarrhea, collapse and convulsions. Key signs: blood discharge from mouth, nostrils, anus, vulva.

**Disorder**: Arsenic Poisoning

**Prevention**: Do not allow cattle access to arsenic: rodenticides, weed killers, or rodent baits.

**Indications for Treatment**: Sudden deaths. Animals weak, staggering, trembling with intense abdominal pain characterized by groaning, grinding teeth and kicking at abdomen. If cattle live for 6 hours or more: diarrhea.

**Disorder**: Blackleg

**Prevention**: Vaccination with a multiple clostridial disease bacterin (4-way, 7-way or 8-way) is basis of prevention. Two doses of vaccine (primer dose and booster dose) are required to provide a good level of protection. Calves should be vaccinated at first working and given a booster prior to or at weaning. Replacement heifers are boosterized prior to breeding. Blackleg is generally not much of a risk for cattle over 2 years old, however, many cows receive annual boosters with a multiple clostridial bacterin containing blackleg to protect them against other agents in the vaccine such as redwater.

**Indications for Treatment**: Usually: calves found prostrate and nearly dead or dead. Course of disease very rapid, death within 12 to 24 hours. Affected animals still alive are severely depressed, febrile and lame. Dead animals swell and decompose rapidly. Crackling due to compression of gas bubbles within the muscles can be felt when pressure is applied to shoulder or hind quarter muscles.

**Disorder**: Bloat

**Prevention**: Feed poloxalene mixed with grain, mixed with mineral or in a molasses block.

**Indications for Treatment**: Bulging left side of abdomen, restlessness, kicking abdomen, difficult breathing.

**Disorder**: Bovine Viral Diarrhea (BVD)

**Prevention**: BVD is one of the most complex diseases of cattle. Prevention is based on 4 steps: 1) biosecurity - only purchase replacements that are test negative for persistent infection (PI), 2) proper nutrition, especially correction of trace mineral deficiencies (copper, selenium and zinc), 3) herd monitoring to be sure there are no PI animals and 4) a proper vaccination program against BVD virus. Consult your veterinarian for details of a BVD prevention program that fits your ranch management practices.

**Indications for Treatment**: BVD does mainly reproductive damage in beef cow/calf operations: embryonic deaths, congenital defects (cerebellar hypoplasia, catarracts), early abortions, stillbirths
and weak calves.

**Disorder:** Brucellosis  (Bang’s Disease)

**Prevention:** Calfhood vaccination of heifers by a veterinarian with RB-51 vaccine between 4 and 12 months of age.

**Indications for Treatment:** Last trimester abortions. Retained placenta.

**Disorder:** Calf Scours  (Neonatal Diarrhea)

**Prevention:** Mainly management practices: 1) calve on clean, uncrowded (no more than 4 cows per acre) pasture with shelter from wind, 2) calve replacement heifers in their own pasture (no cows), 3) rotate hay feeding areas to prevent buildup of pathogenic organisms, 4) administer colostrum milked from dam to any calf (via esophageal feeder) that requires assistance in delivery, 5) do not use wintering grounds as calving grounds, 6) periodically move all cows who have not calved to a new calving pasture and 7) separate calves that develop diarrhea and their dams from the herd. Proper herd nutrition, especially correction of trace mineral deficiencies (copper, selenium or zinc) is also important in reducing the incidence of calf scours. Vaccination of dams in the last 2 months of pregnancy can also help, but management is more effective in prevention of calf diarrhea.

**Indications for Treatment:** Profuse, watery diarrhea, sometimes bloody in calves from 1 day to 3 weeks of age. Dehydration leads to depression, retraction of the eyes, loss of skin elasticity, loss of suckle reflex and finally recumbency.

**Disorder:** Cancer Eye  (Squamous Cell Carcinoma)

**Prevention:** Breed for pigment surrounding eye. Cull affected animals as soon as possible because there is a genetic component to this condition.

**Indications for Treatment:** Lesions start out as white, rough surfaced, elevated plaques that look like very small warts at 1 of 3 common locations: 1) the junction between the white of the eye and the cornea on the back side of the eye, 2) the lower eyelid or 3) the 3rd eyelid. Later, they become large, pink, nodular growths with ulcerations that sometimes are bloody.

**Disorder:** Coccidiosis  (Bloody Scours)

**Prevention:** Avoid overcrowding of young stock. A variety of drugs that kill or prevent replication of coccidia can be placed in the feed or drinking water of calves to prevent coccidiosis. Consult your veterinarian to decide what would be most suitable for your operation.

**Indications for Treatment:** Profuse diarrhea containing mucous and blood. Affected animals strain to defecate, which may result in rectal prolapse. Most cases continue to eat and drink.
**Disorder:** Founder (Laminitis)

**Prevention:** Do not feed excessive amounts of grain. Never feed on 1 day, enough grain for 2 or 3 days. Do not allow cattle access to free-choice grain: keep gates and doors that guard stored grain in good repair.

**Indications for Treatment:** Painful feet cause animal to move stiffly with arched back, hind limbs are placed well under body to take weight off front limbs. Chronic cases develop long, overgrown hooves with horizontal rings on the hoof wall.

**Disorder:** Foot Rot

**Prevention:** Prevention is accomplished by combinations of some, but not all of the following recommendations. Remove factors that cause interdigital trauma. Do not allow cattle to stay in wet areas for extended periods. Remove from stubble fields when signs of foot rot appear. Correct trace mineral deficiencies, especially copper and zinc. Feed elevated amounts of zinc. Feed organic iodine - ethylene diamine dihydroiodide (EDDI) 1 part EDDI / 9 parts loose salt (sodium chloride). Vaccinate with Vocar (Intervet). Give a primer dose followed by a booster dose 3 to 4 weeks later, then administer an annual booster.

**Indications for Treatment:** Sudden onset of lameness, usually one foot, but may affect multiple feet. The foot is swollen and non-pigmented skin of the coronary band is red and tender. There are open ulcers between the toes covered by a very rotten smelling exudate. Severe cases result in infection of the coffin joint with migration of infection through tracts that break out on the surface of the skin and drain pus above the coronary band.

**Disorder:** Grain Overload

**Prevention:** Do not feed excessive amounts of grain. Do not allow cattle access to free-choice grain: keep gates and doors that guard stored grain in good repair.

**Indications for Treatment:** There is a lag period of 1 to 3 days after cattle gorge themselves on grain before they appear ill. The first signs are depression, stiffness when walking (founder) and diarrhea. Later they develop a distended abdomen and kick at their abdomen. Finally, affected cattle become severely dehydrated, weak, recumbent and go into a coma.

**Disorder:** Grass Tetany (Hypomagnesemia)

**Prevention:** Lactating cows eating forages that predispose to grass tetany must be supplemented with a salt/trace mineral mixture that contains high concentrations (8 to 10%) of magnesium. Do not over-fertilize pastures with potassium and nitrogen. Hay bales can be injected with magnesium oxide.
**Indications for Treatment:** Often, sudden deaths of lactating cows grazing lush pastures in the spring or being fed wheat hay or bermudagrass hay. Affected cattle become hyper, belligerent, develop muscle tremors and ear twitches, and stagger. In later stages they become recumbent, exhibit seizures and die within an hour.

**Disorder:** Heat Stroke

**Prevention:** Only work cattle during the cooler morning hours in the summer. Hose cattle down with water to help cool them off if they begin to show signs of heat stress. Provide shaded areas for cattle. Supply cattle with clean drinking water. Use electric fans and water misters for cattle confined to barns in hot weather.

**Indications for Treatment:** Early signs are open-mouthed breathing, lethargy with head held low and salivation. Affected animals then become weak with flaccid muscles, then recumbent and unable to rise.

**Disorder:** Horn Flies

**Prevention:** There are many ways, often used in various combinations, to control horn flies in a cattle herd. Please consult your veterinarian to design a horn fly control program that fits your operation. Briefly, horn flies are killed by exposing them to insecticides in ear tags, pour-on preparations, sprays, dust bags or back rubs. Development of resistance by the flies has been a problem in sustainable control. There have been 2 classes of insecticides used in control of horn flies: 1) organic phosphates and 2) pyrethroids. Recently, spinosins, a new third class has been introduced and is available only as a pour-on. Horn flies are also controlled by adding an insect growth regulator (IGR) to salt/trace mineral mixes.

An effective and economical program recommended by Dr. Hoescher, our Extension Entomologist, is to insert an ear tag or ear tags in March or April when fly levels approach 200 per cow and treat with a spray or pour-on at the same time to knock down the number of flies. The tags will last 3 to 4 months and to prevent development of resistance should be removed when they lose their effectiveness. Then put dust bags out and service the dust bags every 3 weeks by filling them with an insecticide of the opposite class (organic phosphate alternated with pyrethroid products). One bag should be used per 45 cows. Another program would be instead of using dust bags when the ear tags lose their effectiveness, replace them with tags of the opposite class.

**Indications for Treatment:** Irritation from horn fly activity: switching of tails, flicking of legs, and flicking of head. Presence of horn flies on backs and bellies of cattle. Recommendations are that if you can count 200 flies on an animal it will be economically beneficial to treat.

**Disorder:** Lead Poisoning

**Prevention:** Keep animals away from sources of lead including: old car batteries, used motor oil, caulking compounds, lead-based paints, linoleum, putty, and lead water pipes.
**Indications for Treatment**: Sudden deaths. Affected animals stagger, have muscle tremors, blindness, bellowing. Death follows convulsions.

**Disorder**: Leptospirosis

**Prevention**: For *Leptospira* hardjo-bovis - Calves at weaning: 1) vaccinate with Spirovac (Pfizer) and give booster 30 days later and 2) treat calves with LA-200 (Pfizer) at label dosage at weaning to remove carrier state if present. Spirovac is the only *Leptospira* hardjo-bovis vaccine presently available. Then annual boosters when adult. For *Leptospira canicola*, *icterohemorrhagica*, *grippotyphosa* and *pomona* - Calves at first working: vaccinate with a 5-way leptospira vaccine and booster at weaning or sooner if calves are worked again prior to weaning. The booster every 6 months.

**Indications for Treatment**: Low pregnancy rates, abortions, stillbirths and / or weak calves.

**Disorder**: Lumpy Jaw (Actinomycosis)

**Prevention**: Avoid coarse stemmy feed and feed that contains plant awns, stickers or thorns.

**Indications for Treatment**: A hard, immovable, painless bony mass protrudes from the side of the jaw. Often the enlargement has open sores that drain pus. In cases where the teeth become infected, there is pain when chewing and weight loss.

**Disorder**: Mastitis

**Prevention**: Control horn flies, correct trace mineral deficiencies, especially copper or selenium and vaccinate with a *Staphylococcus aureous* bacterin. Give a primer dose of vaccine to replacement heifers at 6 months of age followed by a booster in 2 weeks, then booster every 6 months.

**Indications for Treatment**: In acute cases: enlarged, painful swollen quarter with milk that contains clots (garget). Chronic cases have shrunken, hard quarters, sometimes with no milk (blind quarters). A special form occurs in replacement heifers that calve with a swollen quarter that will not give milk because of complete blockage of the teat canal with scar tissue.

**Disorder**: Navel Ill  (Joint Ill)

**Prevention**: Two factors predispose to navel ill: 1) unsanitary calving areas and 2) inadequate absorption of colostral antibodies. Do not calve in a dirty, wet environment such as corrals. Calve in uncrowded, clean pastures. Move feeding areas often to prevent a buildup of bacteria where calves ly down. If calving does occur in unsanitary conditions, treat the navels of newborn calves with strong iodine (7% tincture of iodine). Administration of colostrum via esophageal feeder to newborn calves that are weak to insure adequate ingestion and absorption of colostral antibodies.
**Indications for Treatment:** Calves 2 to 3 weeks old with a swollen, painful navel that sometimes drains pus and sometimes swollen joints. Affected animals are moderately depressed and have a fever.

**Disorder:** Neosporosis

**Prevention:** This is a new disease and cost-effective prevention programs are in the process of being evaluated. Consult your veterinarian on a neospora control program suited for your ranch. There is a serologic test that is very accurate in detecting chronic neospora carrier cows. Possible ways of controlling neospora in beef herds include test and cull positives, test and do not retain heifers from positives, vaccination, or combinations of these practices. At this time the amount of protection provided by the vaccine is not known. In addition, wildlife spreaders of neospora such as coyotes and foxes must be trapped or killed to keep their numbers as low as possible on the ranch.

**Indications for Treatment:** Abortions, especially in replacement and first-calf heifers, most commonly at 5 to 6 months of gestation, but could occur at any stage, calves born dead (stillbirths) and/or weak calves that are wobbly in hindquarters.

**Disorder:** Nitrate Poisoning

**Prevention:** Test hays that are raised under the stress of drought for nitrate concentration. Do not allow cattle to drink from ponds near oil wells. Do not allow cattle to ingest fertilizers.

**Indications for Treatment:** Sudden deaths. Affected animals have difficult breathing, weakness, tremors and terminal convulsions. Death is possible within hours. The blood of animals that die is chocolate brown.

**Disorder:** Organophosphate Poisoning

**Prevention:** Avoid exposure to organophosphate herbicides and insecticides. Examples include Co-Ral, Diclorvos, Ronnel, Malathion and Parathion.

**Indications for Treatment:** Sudden deaths. Affected animals have profuse salivation, muscle tremors of the face and body, colic with diarrhea, urinary incontinence and runny eyes. They are stiff-legged or have their legs apart when walking. Muscular paralysis is followed by death.

**Disorder:** Pink Eye (Infectious Bovine Keratoconjunctivitis - IBK)

**Prevention:** Control of face and horn flies. Some combination of: insecticide ear tags, pour-on insecticides, insecticide sprays, back rubbers and dust bags. Vaccination in high-risk situations.

**Indications for Treatment:** Runny eyes, sensitivity to sunlight, and squinting of eyes. Key lesion is a white, central corneal opacity that develops into an ulcer. Twenty to 30 pounds lower weaning
weights.

**Disorder:** Pneumonia

**Prevention:** Pneumonia is one of the most complex diseases of cattle. Prevention is based on minimizing as many of the risk factors that predispose calves to pneumonia as possible. Each livestock operation is unique and requires an individual plan developed by its veterinarian to prevent pneumonia. Briefly, prevention is based on: 1) minimizing stress at weaning, 2) proper nutrition prior to and after weaning with special attention to correction of deficiencies of the trace minerals needed for a strong immune response (copper, selenium and zinc), 3) completion of surgeries (dehorning, castration) at least 1 month prior to weaning, 4) treatment for stomach worms and 5) a complete vaccination program against the infectious agents of pneumonia (IIBR virus, BVD virus, PI-3 virus, BRSV, *Mannheimia hemolytica*, *Pasteurella multocida*, and *Hemophilus somnus*) that is carried out on the ranch prior to weaning. Preconditioning is very effective in minimizing pneumonia of calves when they leave the ranch. It consists of the above management practices plus keeping the calves on the ranch for 45 days after weaning.

**Indications for Treatment:** Calves in early stages of pneumonia stand off by themselves and do not come up for feed. They hold their head and ears low, appear sleepy and move slowly. Breathing becomes rapid and shallow. Later, they develop a soft cough, a fever, and runny eyes and nose. The nasal and ocular discharges go through stages: first clear fluid, then thick grey mucous and finally thick yellow pus.

**Disorder:** Prussic Acid Poisoning (Cyanide Poisoning)

**Prevention:** Avoid allowing cattle to ingest the following plants when they are drought-stressed: Johnson grass, sorghum, sudan, wild black cherry, flax, arrowgrass, choke cherry, wild plum leaves and California desert almond.

**Indications for Treatment:** Sudden deaths. Affected animals are weak, stagger, have difficult and open-mouthed breathing, ly down and bellow before dying. Their blood is bright cherry red.

**Disorder:** Polioencephalomalacia (PEM)

**Prevention:** Avoid sudden change in diet from poor level of nutrition to lush pasture. Give a thiamine injection intramuscularly just before placing on lush pasture. Add thiamine to a concentrate diet.

**Indications for Treatment:** Staggering, muscle tremors, blindness and recumbency. Convulsions prior to death.
**Disorder:** Rabies (Hydrophobia)

**Prevention:** Vaccination. It's recommended that all dogs, cats and horses be vaccinated because of their close contact with people. Cattle are only vaccinated under special circumstances of high risk.

**Indications for Treatment:** There is no treatment for rabies. The disease has a paralytic form and a furious form. Symptoms of the paralytic form include knuckling of the hind fetlocks, swaying of hindquarters, straining to pass manure, salivation, yawning and inability to rise. Death occurs in 6 to 7 days. Cattle with the furious form bellow, are alert, aggressive and will attack in an incoordinated way. Bulls exhibit sexual excitement.

**Disorder:** Retained Placenta

**Prevention:** Proper vaccination program against infectious agents that affect the reproductive tract including BVD virus, IBR virus, *Campylobacter fetus* (vibrio) and the *Leptospira* organisms. Prevent difficult births by growing replacement heifers out well and breeding them with bulls that have low expected progeny differences (EPDs) for birth weight or at least use bulls that had low birth weights themselves (less than 70 pounds for British breeds; less than 80 pounds for Continental breeds) to breed replacement heifers. Correct nutritional deficiencies that result in retained placentas: especially deficiencies of vitamin A, vitamin E or selenium.

**Indications for Treatment:** Afterbirth protruding from cow longer than 12 hours. Cow may appear ill, but usually eats and acts normal. Retained placenta is common following abortions due to infectious agents.

**Disorder:** Ringworm

**Prevention:** Do not share brushes or halters. Isolate cases from non-affected calves.

**Indications for Treatment:** Calves with multiple round hairless areas covered by a grey crust varying from the size of a dime to a half dollar. Lesions are usually located on the head or neck. Lesions spontaneously heal themselves.

**Disorder:** Red Water (Bacillary Hemoglobinuria)

**Prevention:** Vaccination. *Clostridium hemolyticum* vaccine can be purchased as a monovalent clostridial vaccine or one of the 8-way combination clostridial vaccines can be used. Vaccination can begin at first working with a booster as soon as possible (3 to 4 weeks later or at weaning). Immunity is short-lived, so boosters must be given every 4 to 6 months although some ranches seem to get good protection from an annual booster given in the spring.

**Indications for Treatment:** Usually a cow is found dead (sudden deaths). Nursing calves can
sometimes develop the disease. Affected animals are severely ill with high fever, depression, yellow mucous membranes and red urine. Death usually occurs within 24 hours. Cattle in areas of Texas with liver flukes should be vaccinated for Red Water.

**Disorder:** Snake Bite

**Prevention:** Generally, snake bites are not a common problem, only occasionally affecting one animal in the herd. If more than one animal is bitten, a rattlesnake den may be present where cattle travel.

**Indications for Treatment:** Swelling of the muzzle or of the extremities. The entire leg may become swollen. The skin over the swelling may become red and covered with fluid. Later the skin may become black, dry, and peel off leaving a large ulcerated area.

**Disorder:** Stomach Worms (*Ostertagiasis*)

**Prevention:** The seasonality of transmission of GI parasites makes **timing** of deworming treatments critical for successful control programs. *Ostertagia ostertagi* is only transmitted during months when temperature and moisture conditions of pastures are favorable for survival and maturation of its larvae. Favorable conditions in Texas usually occur in the spring (mid-March, April, May and mid-June) and the fall (mid-September, October and mid-November). Greater parasite numbers are acquired by calves in the spring than the fall. Some transmission can also occur in winter months if weather is mild. Transmission of *Ostertagia* is minimal during the “summer brownout” (June, July and August).

There are two classes of commonly used anthelmintics (Table 1); benzimidazoles which are white liquids or pastes administered orally, and the newer **macrocyclic lactones** which are administered by injection or pour-on. Although both classes kill nearly 100% of adult worms, there are important differences in their activities. The macrocyclic lactones kill nearly 100% of arrested larvae and have variable numbers of days of residual killing power following treatment while the benzimidazoles kill approximately 20-95% of arrested larvae and have no residual killing power.

**Treatment program** - Many details are considered in a parasite control program for cattle. Its recommended cattlemen consult their veterinarians to design a stomach worm control program that fits their calving season and ranch management practices. Twice a year treatments of cows and calves are recommended for most areas of Texas: 1) spring or summer and 2) fall.

1) **Spring or summer:** Two approaches: 1) Use a benzimidazole 2 times, 6 weeks apart, in the early spring (late March or April) with a goal to “clean the pastures up” with these treatments; or 2) Use a macrocyclic lactone once with its residual killing power that allows treatment to be in the cooler months of May or June or treat once with a benzimidazole after transmission has stopped due to the summer brownout (late June or early July).
2) **Fall:** Its best to wait until late October or November for fall treatment of cows and calves because severe infections of stomach worms can be acquired in September and October. Benzimidazoles or macrocyclic lactones can be used. If deworming is done earlier than late October, however, it's important to use one of the macrocyclic lactones for their persistent killing power. Many ranchers wait until arrival of the first frost to do their fall deworming.

**Table 1 – Anthelmintics Commonly Used to Deworm Calves and Their Dams**

<table>
<thead>
<tr>
<th>Anthelmintic</th>
<th>Trade Name (Manufacturer)</th>
<th>Efficacy vs arrested O. ostertagi larvae</th>
<th>Days killing persistence</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Macrocyclic Lactones</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Doramecin</td>
<td>Dectomax® (Pfizer)</td>
<td>&gt;99%</td>
<td>28</td>
</tr>
<tr>
<td>Eprinomectin</td>
<td>Eprinex® (Merial)</td>
<td>≥99%</td>
<td>*</td>
</tr>
<tr>
<td>Ivermectin</td>
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<td>≥99%</td>
<td>14</td>
</tr>
<tr>
<td>Moxidectin</td>
<td>Cydectin® (Fort Dodge)</td>
<td>&gt;99%</td>
<td>28</td>
</tr>
<tr>
<td><strong>Benzimidazoles</strong></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Albendazole</td>
<td>Valbazen® (Pfizer)</td>
<td>19-85%</td>
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<tr>
<td>Fenbendazole</td>
<td>Panacur® (Hoechst-Roussel) Safeguard® (Hoechst-Roussel)</td>
<td>24-98%</td>
<td>0</td>
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<tr>
<td>Oxfendazole</td>
<td>Synanthic® (Fort Dodge)</td>
<td>34-95%</td>
<td>0</td>
</tr>
</tbody>
</table>

- No label claim

**Indications for Treatment:** Clinical parasitism - mainly calves, but sometimes adults: weight loss, thin animals, rough hair coat, diarrhea and swelling beneath the jaw (bottle jaw). Subclinical parasitism - healthy appearing animals: low weaning weights, low pregnancy rates.

**Disorder:** Tetanus (Lock Jaw)

**Prevention:** Clean cuts or puncture wounds and administer antibiotics. Tetanus can be prevented by vaccination, however, cattle are not routinely vaccinated because they are more resistant to tetanus than horses, sheep and goats. Entire herds of cattle are vaccinated in response to outbreaks.

**Indications for Treatment:** A cut or puncture wound followed in 2 weeks to 1 month by a stiff gait and extended head with legs spread in a sawhorse stance. The tail becomes
elevated, the ears slightly laid back and the jaws clamp shut. Severely affected animals ly on their side with their head and legs in full extension. The key sign of tetanus is that a clap of the hand near the head will cause the 3rd eyelid to flicker over the cornea. Tetanus occasionally accompanies a uterine infection following calving.

**Disorder:** Trichomoniasis

**Prevention:** Trichomoniasis is common in Texas beef cattle herds, but it is not as widespread as vibriosis and expensive vaccines are only partly effective. Most herds should use biosecurity as the main control measure for this disease. *Don’t buy trichomoniasis into your herd!* If you purchase a non-virgin bull, you must have your veterinarian collect and send samples to the diagnostic laboratory for identification of T. fetus by culture or PCR. Do not allow a non-virgin bull to enter your herd until he is proven negative for trichomoniasis! In addition, don’t expose your cows to other herds:

1) Don’t borrow or lease bulls unless they are tested clean.
2) Don’t graze common lands with other herds.
3) Keep your fences in good repair to keep the neighbor’s cattle out.

Another defense against establishment of trichomoniasis into your herd is to keep your bull battery as young as possible. Younger bulls (less than 5 years) have shallower epithelial crypts in the mucosa of the prepuce than older bulls. The *T. foetus* organisms require deep epithelial crypts to establish chronic infection.

**Vaccination** of cows and bulls against *T. foetus* in a beef herd is recommended under certain circumstances:

1) High-risk herds (eg. neighbor’s herd is infected, communal grazing).
2) In suspected trichomoniasis herds.
3) As part of the control program in trichomonas-infected herds.

**Indications for Treatment:** Repeat breeders, abortions and low pregnancy rates accompanied by an occasional uterine infection.

**Disorder:** Urinary Calculi

**Prevention:** Increase salt content of ration to 1.0% of dry matter for several weeks or add 45 grams of ammonium chloride to the concentrate portion of the diet daily. Encourage drinking of water by providing clean water. Provide vitamin A in diet to correct vitamin A deficiency.

**Indications for Treatment:** Usually steers, but occasionally bulls: restlessness, tail switching, kicking at abdomen and straining to urinate with dribbling of urine.
**Disorder:** Vibriosis (Campylobacteriosis)

**Prevention:** Vibriosis can be controlled very effectively by vaccination. This disease is widespread in Texas. All herds must vaccinate their cattle against Campylobacter fetus! The oil-based vibriosis vaccines result in the longest lasting immune response and a single dose is effective with no advantage to using 2 injections initially. Unfortunately, oil-adjuvanted vaccines cause swellings at the vaccination site due to formation of granulomas and fibrosis. Replacement heifers should be vaccinated 1 month prior to the start of their breeding season. Cows should be given an annual booster, preferably 1 month prior to breeding, however, annual boosters of oil-based vaccines given at pregnancy examinations have been found by ranchers to provide adequate protection. Bulls should receive two-5ml doses (2 and 1/2 times the cow dosage) of oil-based vaccine at 4-week intervals beginning 8 weeks before the start of the breeding season. This has been shown to not only prevent infection in bulls, but to clear infections from carrier bulls.

**Indications for Treatment:** Repeat breeders, low pregnancy rates and abortions which usually occur between the 4th and 7th months of gestation.

**Disorder:** Warts

**Prevention:** Warts are caused by a virus and are contagious. Prevent affected animals from rubbing on each other. Do not share halters or brushes. Commercial wart vaccines rarely result in regression of existing warts, but autogenous vaccines are sometimes very effective.

**Indications for Treatment:** Small rough surfaced nodules that develop on the face and neck of young animals under 2 years of age and spontaneously regress in 3 to 12 months. Occasionally, they occur on the penis or teats.

**Disorder:** Wooden Tongue

**Prevention:** Avoid coarse stemmy feed and feed that contains plant awns, stickers or thorns.

**Indications for Treatment:** Calves or cows that lose weight and have excessive salivation, sometimes an enlarged tongue that protrudes from the mouth and sometimes a swelling under the jaw.