The annual loss from equine diseases nationally is estimated at 15% of the horse population. Since the horse industry tends to concentrate in certain areas and as a result of increased animal contact through shows and races, horsemen can expect increases in the spread of disease and the number of animals subjected to infection. Because of the humidity and warm climate in Louisiana, disease carrying insects are active year round, and therefore the spread of disease is greater than in northern states. Internal parasites are a year round problem in Louisiana, since the moderate climate does not provide an effective break in their life cycle. Therefore, it is essential that horsemen maintain a good health program.

The basic principles of horse health are based on prevention of exposure to disease organisms and maintenance of a high level of resistance. A good health program depends on the age-old principles of sanitation and cleanliness, and isolation. Isolation of newly obtained animals and sick animals can greatly reduce the spread of disease.

Resistance to disease can be maintained by good nutrition and vaccination programs. Horses in good condition have greater resistance through their natural body processes. Vaccinations must be kept up to date. Since 2 to 4 weeks are required after vaccination for an animal to obtain active immunity, vaccinations at the time of occurrence of the disease are relatively ineffective. Therefore, it is essential that horsemen carry out a preventative health program, along with proper diagnosis and treatment of diseased horses.

There are basically four aspects to a preventative health program for horses. They are: vaccination, worming, insect control, and first aid. To avoid disease problems, horses must normally be vaccinated in the early spring so that they may develop immunity against the common diseases. Most vaccines require a two-dose administration to develop active immunity, and horsemen should plan to have their horses actively immune prior to the peak disease months of June, July, August and September.

Horse diseases are normally divided into three general areas, depending on the site of their specific damage. They are general body diseases, respiratory diseases and reproductive diseases. The general body diseases such as tetanus, encephalitis, anthrax and equine infectious anemia are normally more serious and potentially fatal. The respiratory and reproductive diseases do not take as heavy a toll in terms of death loss, but they can be quite devastating if not cared for properly. The common respiratory diseases are rhinopneumonitis, influenza and strangles. The reproductive diseases normally seen in horses are the result of bacterial infections in the uterus. However, cases of leptospirosis have been diagnosed in Louisiana. A discussion of these diseases follows.

Infectious Diseases

Tetanus

Characteristics: Tetanus is a highly fatal disease, caused by a bacteria which enters a wound and produces a toxin affecting the nervous system. Tetanus spores are found almost everywhere in the soil and manure. Approximately 80 to 90 percent of the horses infected will die.

Symptoms and Treatment: Stiffness of muscles which occurs first in the jaw and hind legs. In approximately 24 hours, the horse becomes stiff throughout his body and in most cases will be unable to turn his head. The inner eyelid of the horse will protrude and his temperature will rise from 104 to 108 degrees. Treatment is usually fairly ineffective, but penicillin in massive doses and tetanus antitoxin are suggested.

Prevention: There are two methods of prevention: 1) Tetanus antitoxins which should be administered any time a horse is cut or has an open wound, and 2) Vaccination with tetanus toxoid.

Encephalomyelitis

Characteristics: Encephalomyelitis can be caused by three different viruses. These different strains are Eastern, Western, and Venezuelan encephalitis. Encephalitis or Sleeping Sickness is normally transmitted from infected birds to horses by blood sucking insects such as mosquitoes or horseflies. Encephalitis is a disease of the brain and spinal cord, and brain damage is a common result of the disease.

Symptoms and Treatment: High temperature and dullness are the first signs of sleeping sickness. As a result of the infection in the brain, the typical symptoms are staggering, wobbling or walking in circles. With the Eastern strain, the mortality is approximately 90 percent, whereas only 50 percent of those with the Western strain die. There is no effective treatment for encephalitis other than general life support in order to reduce the temperature and maintain body fluids.

Prevention: Preventing encephalitis is a result of good insect control, disposal of dead carcasses, and vaccination.

Equine Infectious Anemia (Swamp Fever)

Characteristics: EIA is a virus disease of horses, normally spread by blood sucking insects and needles or instruments contaminated with blood or serum from an infected horse. There are basically three levels of disease. In the acute cases horses run extremely high temperature and die in a few days to a week. In the sub-acute form, horses may become intermittently sick and appear to recover. The third form is the unapparent carrier, who contracts the disease but shows no outward signs of sickness.

Symptoms and Treatment: A horse infected by swamp fever normally shows high, intermittent fever, depression and weakness, which results in anemia. In the acute case, horses normally die at a fairly rapid rate. There is no effective treatment for EIA.

Prevention: Prevention is based on the control of bloodsucking insects, use of disposable hypodermic needles and sterilization of all skin penetration instruments. If the disease is identified, it can be prevented from spreading further by isolation and/or destruction of sick horses.

Anthrax

Characteristics: Anthrax is caused by bacteria which may be consumed by the animal in contaminated areas. Anthrax is not a major problem in horses but does occur in Louisiana.

Symptoms and Treatment: Anthrax normally causes sudden deaths and symptoms may be unnoticed. However, the horse will exhibit a high fever, be excitable, and in later stages of the disease, be very depressed. Swellings may be noticed, particularly around the neck and shoulder, and there may be bloody discharges from the body openings. Treatment includes large quantities of antibiotics, primarily penicillin, and in the early stages of the disease, antianthrax serum may also be helpful.

Prevention: All infected herds should be quarantined and all carcasses and contaminated materials should be burned or buried. Liming infected areas to destroy contaminating bacteria is desirable. In high risk areas, horses should be vaccinated on a yearly basis.

Influenza

Characteristics: Influenza is basically a respiratory disease which is normally caused by viruses.

Symptoms and Treatment: Influenza causes fever, loss of appetite and a clear nasal discharge.

Inflammation of the eyes and nostrils and a harsh, dry cough normally also occur. These signs normally last from one to two weeks in uncomplicated cases. Young horses are the most severely affected. Death losses are rare unless complications result in pneumonia. The use of antibiotics may be desirable.

Prevention: All sick and new animals should be isolated from three to four weeks to avoid spread of the disease. Vaccination is warranted with horses that are hauled extensively or are on farms where horse traffic is a problem.

Strangles (Distemper)

Characteristics: Strangles is a widespread respiratory disease caused by a bacteria. It is normally spread by direct animal contact or indirect contact with watering or feeding buckets.

Symptoms and Treatment: Strangles is similar to influenza in symptoms. There is normally a discharge from the nostril, inflammation of the nasal tissues and fever. After a few days, the lymph glands in the jaw and throat area will become enlarged, which results in considerable coughing in the horse. As the disease progresses, swollen lymph glands normally abscess and in untreated cases, usually rupture and drain. The recommended treatment includes antibiotics and in some cases, lancing of swollen lymph glands. Antibiotic therapy may not be indicated.

Prevention: Good sanitation and isolation of sick and newly acquired horses is recommended. Vaccination is suggested in frequently hauled horses and in high traffic areas.

Rhinopneumonitis

Characteristics: Rhinopneumonitis is actually a respiratory disease caused by a viral infection. Although it causes rhinitis and pneumonia in foals, its only substantial damage is usually in causing abortions in mares.

Symptoms and Treatment: Rhinopneumonitis causes inflammation in the upper respiratory passage, accompanied by fever, cough and a nasal discharge. Recovery is usually rather rapid, and treatment is usually minimal. In some cases, rhinopneumonitis may go undetected in pastured horses. With the exception of pregnant mares, infection of adult animals produces few, if any, symptoms. Pregnant mares not protected by vaccination and which contract the disease for the first time usually abort.

Prevention: Vaccination is recommended for all mares, and horses which will be in contact with mares, in order to prevent abortions.

Leptospirosis

Characteristics: Leptospirosis is not a common problem in horses, but does occur in Louisiana. It is caused by a bacteria which generally localizes in the kidney and may cause abortion in mares. The disease has been associated with infection in the eye, known as "moon blindness".

Symptoms and Treatment: Leptospirosis in horses is characterized by an elevated body temperature for two or three days. However, the first signs normally noticed are abortions, which may occur long after the fever is gone. There is no recommended treatment.

Prevention: Localization of the disease in the kidneys results in the shedding of the bacteria in the urine of the horse, which can affect other horses which are sharing a common pasture. Therefore, separation and isolation of sick animals or mares that abort is recommended.

Unfortunately, the resistance against diseases induced by vaccination is only short-lived, and hence

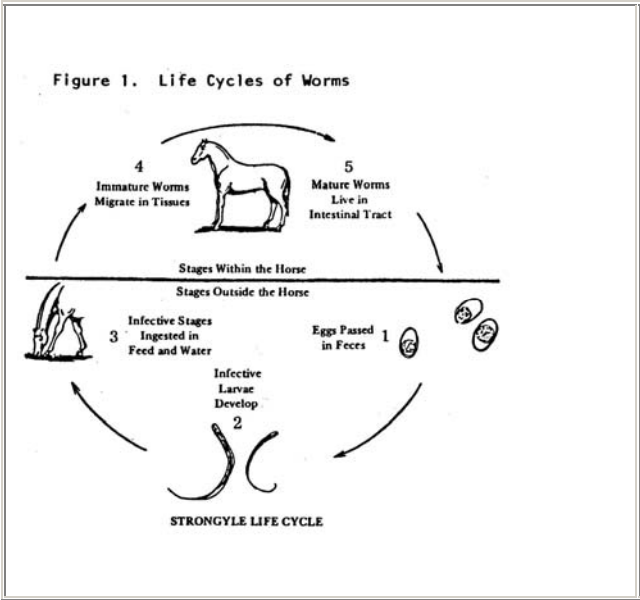
boosters are necessary to insure good protection. Veterinarians will suggest specific vaccination schedules as circumstances dictate. Foals should normally be vaccinated at three to four months for tetanus, encephalomyelitis, rhinopneumonitis and influenza, and re-vaccinated approximately a month later. All adult horses should be vaccinated in the spring for tetanus, rhinopneumonitis, influenza and encephalitis. Horses with limited exposure to outside horses should be re-vaccinated in the fall for the respiratory diseases. However, horses that receive greater exposure such as show and race horses, should be vaccinated four to six times per year. Pregnant mares should normally be vaccinated at least two weeks before foaling in order to pass some active immunity to the foal. A year-round vaccination program is outlined in Table 1. By maintaining an active immunity to most of the common diseases, most disease problems in horses can be avoided.

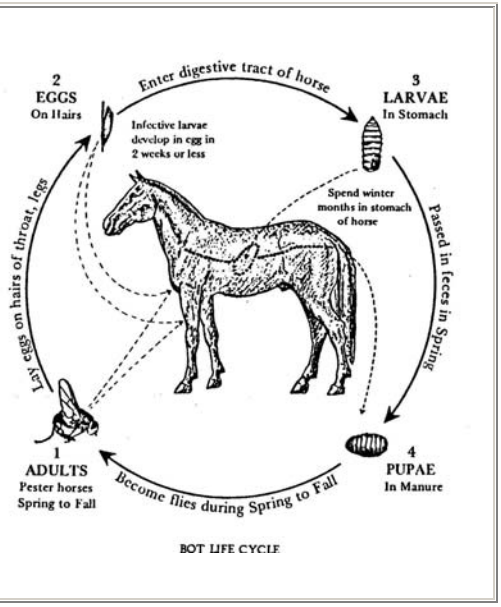
Table 1. Vaccination Schedule

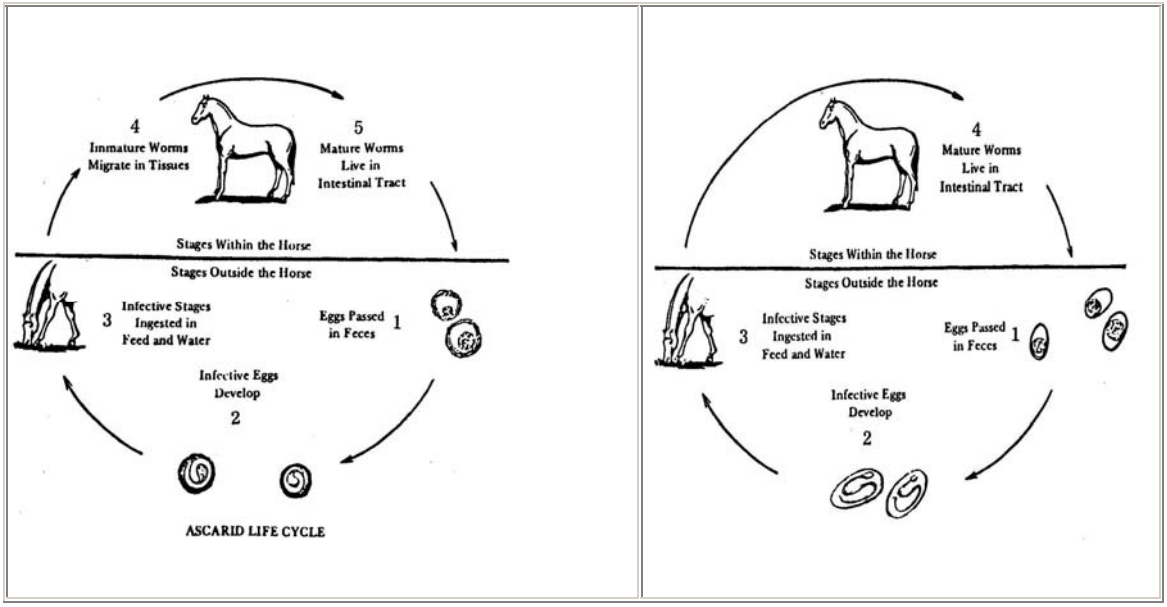
Foals:	5 months - Tetanus, Encephalitides, Rhino, Flu, West Nile 6 months - Tetanus, Encephalitides, Rhino, Flu, West Nile
Adults:	Spring – Tetanus, Sleeping Sickness, West Nile
Mares:	3 months gestation - Pneumobort K™ 6 months gestation - Pneumobort K™ 9 months gestation - Pneumobort K™ Plus Tetanus and Sleeping Sickness at least 2 weeks before foaling.

Internal Parasites

A horse's worst enemies are internal parasites. Worms often get the jump on horsemen because of the tendency to become lax about controlling this unseen enemy. When worms have done their typical damage, such as causing colic, anemia, or poor performance, it may be too late to avoid permanent internal damage to the horse. No horse is entirely free of parasites, but the degree of infestation depends upon several factors. This includes the horse's environment, nutrition, and the type of worm control program.







The most common internal parasites in horses are pinworms, bots, strongyles and ascarids. Strongyles, or bloodworms, are considered to be the most damaging. They are particularly serious in that they affect the old horse as well as the young horse. These parasites are bloodsuckers, and often cause anemia, weakness and diarrhea if they are uncontrolled. Ascarids are round worms or long white worms often seen in young horses. They tend to cause loss of energy, digestive disturbances, and unthriftness in young horses. They are not a substantial problem in older horses. Bots are the immature maggot stages in the life cycle of the bot fly. The bot is particularly damaging in the stomach of the horse, and may cause ruptures and death. There are many other types of minor worms, such as pinworms, which cause considerable irritation to the horse but are basically inconsequential in the life of the horse.

The life cycle of each of these parasites is somewhat different, and are shown in Figure 1. The typical parasite has four to five stages in its life cycle. The larva are typically ingested by the horse and pass into the stomach. From there they migrate to various organs in the horse's body and cause most of their damage during the migration stage. They eventually wind up back in the intestines, where they lay large quantities of eggs. These eggs pass out through the feces, hatch, develop into infective larvae, and the cycle begins again when the horse ingests the larvae.

The control of internal parasites in horses is based on sanitation, management and drug treatment. Proper sanitation management is essential to decrease the re-infestation of horses and effectively break the worm cycle. Proper sanitation methods include cleaning stalls regularly, composting manure, moving feed and water buckets off the ground and control of bot flies. Management of horses on pasture to decrease the re-infection rate is very beneficial. Management techniques to accomplish this goal are: not over stocking pastures; rotate pastures every two to four weeks; provide proper drainage in the pastures; do not spread manure on pastures where horses graze; separate older and younger horses; and prevent fecal contamination of water and feed.

Composting manure and dragging pastures to spread manure are also effective in breaking the worm cycle. The proper disposal of manure is of the utmost importance, since this is the primary source of re-infection in horses.

Treatment for worms should begin in foals at approximately two months of age. Repeat treatments at two month intervals will be necessary to control the parasite load in young growing horses. In yearlings, two-year-olds and mature horses, the periodic treatment program may vary from four to six treatments per year, depending on the level of parasitism.

Drugs should be used alternately to reduce the buildup of parasite resistance. Horsemen must be careful that they do not simply change products of a similar drug when they actually need to change the type of drug used. Table 2 shows the different types of drugs available. In Louisiana, horses should be wormed for bots at least three times a year. When using any of the de-worming products always follow label precautions and de-worm regularly to insure a healthy horse.

The most effective drugs and the only ones that worms have not developed some immunity to is ivermectin and moxidectin.

Table 2. Dewormers for the Horse

		Parasites			
Drug	**Product Name**	**Ascarids**	**Strongyles**	**Pinworms**	**Bots**
Bendazoles					
Cambendazole	Camvet	+	+	+	
Fenbendazole	Panacur	+	+	+	
Mebendazole	Telemin	+	+	+	
Oxfendazole	Benzelmin	+	+	+	
Thiabendazole (TBZ)	Equizole, Equivent Tz, Performance Horse Wormers		+	+	
Ivermectin	Eqvalan	+	+	+	+
Moxidectin	Quest	+	+	+	+
Others					
Febantel	Rintel, Cutter Paste Wormer	+	+	+	
Piperzine (PPZ)	Equivet Jr., Wonder Wormer, Foal Wormer, Alfalfa Pellet Horse Wormer	+		+	
Pyrantel Pamoate	Strongid T, Banminth	+	+	+	
Combinations					
TBZ & T	Equizole B, Equivet 14	+	+	+	+
TBZ & PPZ	Equizole A	+	+	+	+
PPZ, T & Phenothiazine	Dyrex TF	+	+	+	+

External Parasites

External parasites such as flies, mosquitoes, ticks and lice, can cause considerable irritation to the horse, as well as carry many diseases. Control of external parasites is a two-fold problem. First, parasites must

be controlled in barns and other areas where horses are kept. Second, parasites on the horse must be eliminated. Most insecticides can be used in barns and surrounding living areas of the horse without adverse affects. Horsemen should be cautious about getting insecticide on feed and water containers, and horses should be removed from the area two to three hours following application of an insecticide with residual effects. By doing a thorough job of spraying facilities, most insect problems can be eliminated.

The horse himself is a difficult problem in terms of protection from external parasites. Since the horse sweats profusely during hard work or even play, the horse can effectively wash much of the insecticide from his body. Therefore, flies and other external parasites can return to the horse in a very short period of time without any detrimental effects. As a result, horses normally need frequent applications of insecticide to control flies. Most of the products which are approved for cattle are also approved for horses, but most of these products require a two to three week waiting period between each application. If the two to three week waiting peri6d is not observed, the horse may become sick and occasionally die as a result of insecticide over- dose. Since horses basically need a daily application of insecticide during the peak of the insect season, the pyrethrins are the only products that really fit the needs of the horse. Most insecticides designed specifically for horses are primarily pyrethrins.

Lice and ticks on horses can normally be controlled by a one-time application of almost any of the normal livestock sprays: Horsemen should always observe the label on any products they utilize, and stay within the minimum confines of the precautions on the label. Insecticides should not be used on horses that are sick, weak or in some other way incapacitated.

Disposal of fly production sources such as manure, feed residues and other barn wastes, is an effective method of fly control.

Oral larvacides, such as rabon, that is presently being used for beef and dairy cattle have been cleared for horses. Effective control of external parasites can greatly reduce the irritation suffered by your horse, and the disease problems encountered.

First Aid

First aid is important to maintaining a healthy horse. Treating injuries or diseases effectively is dependent on recognition and early diagnosis of the problem. Therefore, horsemen must observe their horses carefully and recognize any deviation in the horse's normal behavior.

A healthy horse normally stands on four feet, is alert and content. The horse should look completely unworried when resting, should be bright-eyed and perk up readily. A good appetite is a good indication of a horse's well-being. Most horses eat aggressively and consume all the feed offered in approximately thirty minutes. A slick hair coat and pliable, elastic skin are also normal characteristics of a healthy horse. A normal horse has a temperature of approximately 100.5, with a range of 99 to 100.8 degrees. The normal pulse rate is 33 to 44 beats per minute, and the normal respiration rate is 8 to 16 breaths per minute. A horse's membrane should always be pink, indicating a good blood flow, and the feces should be reasonably well formed into tight, biscuit-like droppings. Any deviation from normal indicates potential problems. At the first sign of trouble, the horseman should check the horse for swelling or cuts. Taking the horse's temperature, pulse rate, and respiration rate will give some indication of the specific problem. Colics, injuries or high temperatures are indication that a veterinarian should be called. In the case of injuries, every effort should be made to control bleeding and avoid contamination of the injured tissues. Cleaning and wrapping the injured area is desirable, but application of powders or medicines that might dry the area are undesirable if a veterinarian is expected to sew the wound.

Colic is normally caused by internal parasites, but may be caused by any number of other things, such as moldy feed. Colic is not actually a disease itself, but is a symptom of intestinal pain in the horse. The actual problem may be caused by anything from excess gas from over feeding to twists, impactions or

rupture of the intestines. In any case, a veterinarian must be called to diagnosis the exact problem and to initiate proper treatment.

High temperatures or swelling in various areas of the body are indications of disease in most cases. Quick diagnosis and treatment are essential in combating horse diseases. Therefore, horsemen should always have easy access to a veterinarian in order to properly care for their horse. Prevention is always the most effective means to good horse health.