A Center of Wellness
LSU Equine Hospital
director’s message
The faculty and staff of the EHSP have continued to work hard to advance this program as one of the elite equine biomedical programs.

select services
To provide the latest, most advanced clinical services and excellent client care, the LSU Equine Clinic has restructured the manner in which it delivers select services.

equine internal parasite control
Horse owners spend a lot of time and money trying to control intestinal parasites. Learning more about these silent offenders can help us win the battle.

lexi story
The extraordinary efforts of globe-trotting surgeons, dedicated LSU veterinarians and technicians, and a determined team of horse owners recently combined to preserve the sight of one 13-year-old Dutch Warmblood mare through a procedure known as a vitrectomy.
If pictures paint a thousand words, imagine how powerful they can be when diagnosing an illness or injury in your horse. Not just any pictures, but detailed state-of-the-art images of practically any organ, blood vessel or nerve in crisp, clean pictures. Imagine the possibilities.

Magnetic Resonance Imaging can make this happen. You probably know it as MRI.

From the largest tendon in a racehorse, to the tiniest optic nerve inside a baby kitten, MRI has the capability to look just below the surface, or deep within the body; painlessly, quickly, and safely.

The School of Veterinary Medicine at Louisiana State University is eager and ready to add this valuable resource to our remarkable repertoire of powerful diagnostic tools.

We’re hoping you will share in our vision. With your help, we can see further than ever before.

To learn more about the goal to have a Veterinary MRI at LSU, please contact Ky Mortensen at 225.614.7714. Imagine the difference you can make.
Greetings from the Equine Health Studies Program!

Much has happened since our last newsletter. The faculty and staff of the EHSP have continued to work hard to advance this program as one of the elite equine biomedical programs by remaining focused on our goals, including education, scientific discovery, clinical and public service and industry outreach activities.

The team remains dedicated to clinical service and has worked hard to change the physical facility and hospital function to provide the most effective and efficient service to the horse-owning public and their veterinarians. The most visible recent changes are the renovations to the stalls to replace the old chain link fronts with a more traditional style, solid panel with sliding stall door and heavy duty woven wire windows.

Plans in the coming year include the complete renovation of the remaining stall fronts and renovation of the stall backs. Surgery recovery renovations are underway to replace aging doors and provide windows for recovery personnel to more closely watch horses recover and assist if necessary. The Large Animal Admissions Office will soon undergo substantial renovation with the goal of allowing us to provide more prompt and efficient service by giving clients greater access to the reception and cashier staff, increasing the efficiency of the staff work space, and increasing the space available for medical record storage. Please accept our apologies as clientele are temporarily directed around construction sites with the hopes of ultimately optimizing the service provided to you and your horse.

Our Select Clinical Services, including podiatry (available on Fridays), dentistry (Thursdays), performance testing (Mondays), and advanced diagnostic imaging (Monday, Tuesdays, Wednesdays), are working successfully and enjoying a thriving caseload. We are still working diligently on selecting the optimal MRI equipment to add to our advanced diagnostic imaging service in the near future.

Additional new services in the clinic include IRAP therapy for joint disorders and stem cell therapy for tendon lesions.

Broadening our horizons beyond our own doors, we now have Dr. Ann Chapman offering Equine Mobile Medical Diagnostic and Consulting Services. A Board-certified veterinarian in Equine Internal Medicine, Dr. Chapman travels to consult with veterinarians and clients each day, offering equine ultrasonography, digital radiography, telemetric electrocardiography, echocardiography, and endoscopy. In addition, she is able to offer transtracheal aspirates for culture, PCR, cytology, subpalpebral lavage placement, cardiac examination, neurologic examination, ophthalmic examination with gonioscopy and liver biopsy at the farm, race track, or training center.

Our new client care coordinator, Leslie Talley, can assist with scheduling all of our newer services as well as other medical, surgical, theriogenology, and field service appointments. Her efforts have enabled us to increase the efficiency and effectiveness of our patient care. These changes have been based on constructive feedback obtained from our clientele, and we continue to invite these comments to allow us to improve the delivery of our services. As always, our doctors are available for consultations.

The 6th Annual Stallion Service Auction was a successful multiple-breed, internet-based auction that showcased stallions and farms and allowed participants to identify top quality stallions to breed to their
mares. We thank all participants who donated a breeding or made bids. Since the auction began in 2000, we have raised nearly $100,000 toward construction of the completed Equine ICU Unit and the planned Equine Isolation Unit. We invite you to visit www.lsuequine.com in the coming breeding season to participate in the current stallion auction.

Our team has continued to develop strategic plans for expansion and renovation of facilities and enhanced diagnostic equipment. Our most urgent need continues to be the construction of a new, 10-stall equine isolation unit. We have received substantial contributions toward this effort and are extremely grateful for the generosity of our supporters. Without the continued commitment and assistance from our supporters, these improvements would not be possible. The Dean’s Office is developing plans to enclose six hospital stalls in a climate controlled space with a dedicated entrance to the outside of the equine hospital to temporarily increase our equine isolation capacity. However, this temporary facility will still fall short of the isolation space needed to handle the current caseload of infectious diseases. The LSU Equine Clinic has a strict infectious disease (biosecurity) protocol established and monitored by the SVM Infectious Disease Committee to reduce the risk of nosocomial infection. These protocols are present to protect the entire hospital population and sometimes require refusal of admission of infectious patients because of the limited space currently available for isolating patients. We encourage your continued involvement to support this construction effort.

The EHSP recently had new stall fronts put in the equine sections of the Veterinary Teaching Hospital’s barn.

We recently bid a fond farewell to renowned LSU equine surgeon, Dr. Jeremy Hubert, as he is going back to his home country of Zimbabwe after 10 years of service with the EHSP. Dr. Hubert was an incredible asset to the program, as many of you are aware, and we wish him all the best. With that, we are currently in the search of a new equine surgeon.

Still fresh on everyone’s mind is the departure of Dr. Rustin Moore, the former esteemed director of the Equine Health Studies Program. Dr. Moore currently serves as the head of the Veterinary Clinical Sciences Department at The Ohio State University and is happy to reside closer to his family in West Virginia.

At Louisiana State University, we the faculty and staff have remained committed to the precepts upon which the Equine Health Studies Program was established. The dean is currently involved in a national search for a new director who will continue to serve the members of the equine industry in Louisiana, while still continuing to build the EHSP as an elite comprehensive equine biomedical program based on quality and productivity. We remain dedicated to being an integral part of the State’s equine industry and to working with the people and horses of Louisiana.
Advances in equine medicine and surgery have greatly improved veterinary medicine. Our ability to successfully treat many severe disease conditions of horses is greater than ever. Horses that formerly would have had little or no hope are now successfully treated for a number of life threatening diseases. These gains however can come at the cost of increased numbers of hospital-acquired infections, as hospitalization stays are prolonged, and patients who suffer concurrent problems, such as immune suppression, are treated.

Maintaining the integrity of any health facility as a “disease free” area is a challenge faced not only by veterinary clinics around the globe, but one that human hospitals also battle on a daily basis. Hospital-acquired or “nosocomial” infections are not limited to horses. A 1995 study conducted by the Centers for Disease Control and Infection found that nosocomial infections in human hospitals accounted for 88,000 deaths in the United States and cost $4.5 billion dollars. Approximately 5% of hospitalized humans develop nosocomial infections, and these infections are the eighth leading cause of death in the United States.
In equine veterinary hospitals, the leading nosocomial infection is caused by the bacteria Salmonella. Salmonellosis, the disease caused by Salmonella bacteria, is a zoonotic disease. This means that humans, as well as many other species including the horse, can contract the disease. Salmonella causes serious gastrointestinal diseases, such as diarrhea and colic in horses and people. The disease can result in death, but horses can be infected with Salmonella organisms and not have any signs of disease. Infected horses pass Salmonella bacteria in their manure, thus contaminating the environment. Horses become infected with Salmonella by ingesting the bacteria. In most healthy horses, the bacteria are removed by a combination of natural defenses before disease occurs. Gastric acid in the stomach is frequently able to kill Salmonella organisms before they reach other parts of the intestinal tract. Resident bacteria present in the intestinal tract (called the normal flora) produce toxins that kill Salmonella and compete with them for food. In addition, the horse’s immune system produces factors that prevent Salmonella from attaching to the intestinal lining. When these natural defenses are altered, the risk of infection can increase.

Approximately 2% of horses in the general population are infected with Salmonella and shed the bacteria in their feces. Of this infected population, most will never show signs or exhibit any disease. These silently-infected horses pose a threat to other horses, people, and animals because they are not recognized as a source of infection. The number of infected and diseased horses detected in a population can increase to 10%-20%, depending on the type of Salmonella organism, the environment, and the susceptibility of the horse population. An individual horse’s susceptibility is impacted by transportation, antibiotic administration, anesthesia and surgery, and other diseases (especially colic), all of which are common factors in horses admitted to equine veterinary hospitals. Approximately 6%-7% of horses in equine hospitals have been shown to have Salmonella in their feces. Horses silently infected with Salmonella organisms begin shedding the bacteria in higher numbers in their feces when stressed, and horses not already infected are more likely to become infected when stressed.

Hospital-acquired salmonella infections have resulted in closure of at least one large equine hospital each year for the past
five years in the U.S. Often the decision to close to allow more thorough cleaning and disinfection is made only after several horses have died from disease due to Salmonella infection. Outbreaks in the veterinary hospitals of Purdue University, Colorado State University, Michigan State University, the University of Georgia, the University of Pennsylvania, the University of Wisconsin, and the University of California were associated with disease in 15 to 30 animals at each institution with 25%-44% of these horses dying.

In 2006 an outbreak of nosocomial salmonellosis at the LSU Veterinary Teaching Hospital was linked to a foal that was admitted in February 2006. Over the next several months, 14 horses became silently infected with this particular Salmonella organism (as detected by culture), but no horses developed illness. The LSU Equine Hospital administration elected to voluntarily close the hospital in January 2007 for thorough cleaning and disinfection. This preemptive measure has removed this Salmonella organism.

Comprehensive infection control procedures have been developed by the Infectious Disease Committee of the Veterinary Teaching Hospital and Clinic. The plan addresses two major aspects of hospital-acquired Salmonella infections: 1) handling of horses with diarrhea to limit the exposure of healthy horses, and 2) identification of “healthy” horses that are silently shedding the organism and pose an unrecognized risk.

Some of these procedures are as follows:

1. All horses with diarrhea are isolated from the remainder of the hospital population. Not all cases of diarrhea are due to Salmonella; however, Salmonella is a common cause of diarrhea. In this case, “guilty until proven innocent” is the rule.

2. The feces of all hospitalized horses without diarrhea are cultured for Salmonella organisms at the Hospital’s expense to detect silently-infected animals. Fecal samples are collected daily for the first five days, and then weekly during hospitalization. Horses from whom Salmonella bacteria are cultured, whether or not they have diarrhea, are then isolated from the remainder of the population.

3. Stalls are scrubbed and disinfected between horses after every use.
4. Any stalls and other hospital areas previously occupied by a horse with diarrhea are cleaned, disinfected and cultured for Salmonella. These stalls are not used for another patient until the cultures show that Salmonella has been eliminated.

5. When handling horses that have diarrhea (whether confirmed to be due to Salmonella or not), personnel wear disposable plastic boots, protective gowns and gloves, which are changed between each patient.

6. When handling horses that have no apparent signs of diarrhea, personnel wear disposable gloves and/or use disinfectant hand foam before touching patients and wear disinfected rubber boots when entering the stall area of the hospital. Access to the patient housing and treatment areas of the Hospital is restricted so that these policies can be enforced.

In our on-going effort to promote and maintain a healthy facility for all horses, the measures that we take cannot be compromised. When visiting our facility you will find footbaths throughout the hospital and many areas that require particular footwear and/or attire. We appreciate your cooperation as we continually work to maintain and improve our biosecurity measures. They are in place to protect your horses and ensure a healthier outcome for every equine patient that visits our state’s preeminent equine health facility.
To provide the latest, most advanced clinical services and excellent client care, the LSU Equine Clinic has restructured the manner in which it delivers select services. These selected services include performance evaluation and fitness testing, advanced diagnostic imaging, advanced dentistry and advanced podiatry and therapeutic farriery.

Performance Evaluation and Fitness Training
The equine clinic currently offers performance evaluation and fitness testing of horses; however, this is now augmented by the installation and implementation of a new high-speed treadmill and other technologies. This service utilizes a standard set of tests to provide an accurate assessment of performance ability or limitation as well as enabling the clinician to diagnose subtle changes that affect performance in the elite athlete. The service will be offered every Monday.

The service includes conducting a routine physical examination, pre- and post-treadmill electrocardiogram (ECG) and echocardiography (ultrasound of the heart), standing endoscopic (scoping) evaluation of the upper and lower respiratory tract, dynamic endoscopy while exercising on the high-speed treadmill, telemetric ECG during treadmill exercise, pre- and serial post-exercise measurement of muscle enzymes in the blood to assess for muscle disorders such as "tying up," and post-treadmill transtracheal wash to evaluate for lower airway inflammation and/or bleeding. This panel of tests will provide a comprehensive approach to assess performance capabilities or limitations and fitness. The performance evaluation and fitness testing will be directed by one of on-clinic surgeons.

Advanced Diagnostic Imaging
We offer the latest in state-of-the-art technology in imaging for equine patients. Advanced imaging modalities offered include computed tomography (CT or CAT scan), nuclear scintigraphy (bone scan), and distal limb magnetic resonance imaging (MRI); these imaging modalities compliment our digital radiography and ultrasonography capabilities. The nuclear scintigraphy or bone scan unit uses an injection of radioactive material to identify and locate subtle areas of bone, ligament/tendon or muscle injuries often before they can be detected by radiographs or ultrasound. MRI is the latest in diagnostic imaging available for horses and has the ability to yield detailed images of bone and soft tissue inside the foot and lower limb, thus enabling veterinarians to detect injuries not
routinely visible with other imaging modalities. The advanced imaging program is directed by Dr. Daniel J. Burba and routinely offered on Monday through Wednesday of each week.

Equine Dentistry Service
The Equine Clinic also offers an advanced equine dentistry service. This service focuses primarily on the diagnosis and treatment of more complicated dental disorders than those correctable by routine dental care. This service includes up-to-date imaging modalities including digital radiography, nuclear scintigraphy, and computed tomography (CT). Both surgical and nonsurgical techniques will be available for the treatment of developmental and eruption abnormalities in young horses; misalignments, severe malocclusions, dental infections and periodontal disease in adult and geriatric patients; and other dental pathology, including neoplasia (tumors) and trauma. The equine advanced dentistry service is directed by Dr. Chuck McCauley and routinely offered on Thursday of each week.

Equine Podiatry and Advanced Therapeutic Farriery Service
The Equine Clinic also offers an equine podiatry and advanced therapeutic farriery service; however, this will be enhanced, and the service will be made more consistent. This service will provide focused veterinary and skilled farrier care to address hoof problems and lameness issues originating from the feet (such as navicular disease, pedal osteitis, laminitis and other conditions) using corrective therapeutic trimming, shoeing and veterinary management. To help ensure optimal results, medical imaging modalities such as digital radiology, CAT scan, MRI and ultrasound will be used where appropriate and necessary to identify changes within the hoof.

These images, as well as digital photographs, will be stored and available for review to facilitate assessment of case progression and monitoring over time. The equine podiatry and advanced farriery service will be directed by Dr. Colin Mitchell and routinely offered on Fridays of each week.

To learn more about these services, please contact Leslie Talley, client care coordinator, at the LSU Equine Clinic at 225-578-9500 and/or visit the Equine Health Studies Program website at www.LSUEquine.com.
Compounded Drugs: Warning!

Rebecca S. McConnico, DVM, PhD, Diplomate ACVIM, associate professor of veterinary medicine

Due to the confirmed and tragic deaths of two valuable racing Quarter Horses (and the unconfirmed reported deaths of several other race horses) in South Louisiana following ingestion of an overdose of an illegally prepared and marketed form of clenbuterol in the fall of 2006, the faculty of the LSU EHSP want to inform and warn veterinarians, horse owners and caretakers of the dangers associated with using illegal or unapproved compounded drugs. Compounding is defined as the alteration of an original drug form for the purposes of ease of administration or because the original dosage form is unsuitable for the intended purpose.

The Food and Drug Administration (FDA) recognizes a necessity for compounding in veterinary practice but must ensure that compounded drugs do not cause harm to treated animals, are not associated with therapeutic failure resulting from a lack of product potency, and do not cause violative residues in food-producing animals. The Animal Medical Drug Use Clarification Act (AMDUCA) permits compounding under very limited circumstances. Compounding of veterinary drugs must be done only on the order of a licensed veterinarian and based upon a valid veterinarian/client/patient relationship from approved human or veterinary drugs. A veterinarian/client/patient relationship is defined as one whereby the veterinarian performs regular physical examinations and provides health maintenance and veterinary medical care of the client-owned animal. In addition, other criteria must be met including establishing the need for a compounded product and prohibitions against use of some drug products in food-producing animals. AMDUCA does not permit compounding from bulk drugs, and bulk drug agents can only be available for use by officially approved personnel (in the case of clenbuterol, it is Boehringer Ingelheim Vetmedica, Inc).

The American Association of Equine Practitioners (AAEP) encourages veterinarians and equine caretakers to understand the possible serious implications when a choice is made to use unapproved compounded drugs. Equine veterinarians should be educating their clients about the potential for abuse or injury to horses being administered illegally prepared or acquired drugs, as has occurred in the illegal clenbuterol horse deaths. It is critical for veterinarians and horse care providers to make sure that the compounded drugs they choose to use are safe and that the rules of use (AMDUCA) are specifically followed. Any generic drugs must be licensed and must have been approved by the Federal Drug Administration.
Since compounded drugs are combined to create a desired effect and because they are not licensed, they are not held up to the same quality control standards as those of licensed drugs. Use of compounded medications is illegal under strict interpretation of the Federal Food and Drug Cosmetic Act because compounded substances result in unapproved drugs. The AAEP states that, “While drug compounding serves a very legitimate and important purpose in animal health, manufacturers must abide by federal regulations in order to create a high-quality, safe product and encourage a fair marketplace for animal health products.” For additional information the reader is referred to Papich MG. Drug Compounding for Veterinary Patients. AAPS Journal. 2005; 07(02).

LSU third-year veterinary student Michael Rossi presented his research project entitled “Comparison of neurokinin-A receptor protein in healthy and RAO-affected horses” at the Morris Animal Foundation (MAF) annual meeting in June 2007 in Boulder, Colo. He was a research fellow of MAF for the summer of 2006 at the LSU School of Veterinary Medicine. His mentor is Dr. Changaram S. Venugopal of the Department of Veterinary Clinical Sciences. Michael is also the current recipient of the “Harold G. Forman Family Foundation Equine Scholarship” given through the LSU Equine Health Studies Program.

The Harold G. Forman Family Scholarship is given to two LSU veterinary students each year to assist with the costs of attending veterinary school. Mr. Harold Forman, a prominent Thoroughbred owner and breeder from Folsom, Louisiana initiated interest in establishing the gift. Through the Foundation’s gift of $5,000, two scholarships were specifically established for veterinary students in their second or third year of veterinary school who have achieved a GPA of 3.0 or greater and have demonstrated economic need.

Congratulations to Michael on his successful work in equine research and for his achievement in being the second recipient of the equine scholarship from the Harold G. Forman Family Foundation.
Horse owners spend a lot of time and money trying to control intestinal parasites. Unfortunately, most infected horses don’t show weight loss, diarrhea, or colic until the damage to the intestine is severe. Although there are new effective anthelmintics (drugs that target intestinal parasites), control in horses is not simple. Learning more about these silent offenders can help us win the battle.

Introduction

Foals and yearlings are more susceptible to many parasite infections that do not usually cause problems in adult horses. Included in this category are threadworms, roundworms, and pinworms. Therefore, deworming programs for immature horses must be different than those recommended for adults.

A review of the major targets of parasite control programs for juvenile horses, in the order a foal encounters them, is listed in the following table:

<table>
<thead>
<tr>
<th>Common Name</th>
<th>Scientific Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Threadworms</td>
<td>Strongyloides westeri</td>
</tr>
<tr>
<td>Roundworms</td>
<td>Parascaris equorum</td>
</tr>
<tr>
<td>Large Strongyles</td>
<td>Strongylus vulgaris, S. edentates, S. equi</td>
</tr>
<tr>
<td>Small Strongyles</td>
<td>Cyathostomes</td>
</tr>
<tr>
<td>Tapeworms</td>
<td>Anoplocephala perfoliata, A. magna</td>
</tr>
<tr>
<td>Pinworms</td>
<td>Oxyurus equi</td>
</tr>
</tbody>
</table>

Threadworms

Most strongyloides infections are acquired when a foal suckles the mare or ingests the larva from a contaminated muddy environment. Management of this parasite can be approached by treating the mare with ivermectin within 24 hours of foaling, thus killing migrating larvae in the mammary gland of the mare. However, the current prevalence of strongyloides infections in foals is low. In addition, the clinical manifestations of infection are usually mild, so taking a wait-and-see approach may be adequate for most breeding farms.

Roundworms

Ascarid eggs are plentiful on farms, and infection can cause severe disease in foals. Roundworms are the main target of parasite control programs for immature horses since infection is very common. The goals of ascarid control are twofold: 1) to kill worms and minimize negative effects on health and performance, and 2) to prevent the maturation of worms so eggs are not shed into the environment.

Effective anthelmintics targeting ascarids fall into two broad categories: 1) those that kill adult and juvenile worms present in the intestine, and 2) those that are effective against larvae that are migrating through the liver and lungs of a foal (Table 2). It takes about two to three weeks for larval worms to complete their migration and reach the intestine, and at least eight weeks or longer for worm maturation and egg shedding. If adulticidal drugs are used, treatment is given when the foal is about 60 days of age. If larvacidal drugs (i.e., avermectin products) are used, treatment is given at 45 days of age. Thereafter, treatments should be administered at 60-day intervals.

Delaying treatment for intervals longer than 70 days could allow ascarids to mature and contaminate the pasture with eggs. Roundworm eggs can survive for a decade or longer, so one break in protocol can have very long-lasting consequences. Bimonthly
treatments should be continued until horses eventually acquire immunity at 15 to 18 months of age. Fecal exams should be performed on all juvenile horses (if small herd) on the farm or at least 10% of the juvenile horses (if very large herd) at each deworming interval, to monitor the ongoing efficacy of the control program.

Large and Small Strongyles and Pinworms

The control program recommended above for ascarid control is effective against these parasites.

<table>
<thead>
<tr>
<th>Drug Activity</th>
<th>Chemical Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adulticidal</td>
<td>Fenbendazole (10 mg/kg)</td>
</tr>
<tr>
<td></td>
<td>Ivermectin</td>
</tr>
<tr>
<td></td>
<td>Moxidectin</td>
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<tr>
<td></td>
<td>Oxfendazole</td>
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<td></td>
<td>Oxibendazole</td>
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<td></td>
<td>Piperazine</td>
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<td></td>
<td>Pyrantel pamoate</td>
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<tr>
<td></td>
<td>Pyrantel tartrate</td>
</tr>
<tr>
<td>Larvicidal</td>
<td>Ivermectin</td>
</tr>
<tr>
<td></td>
<td>Moxidectin</td>
</tr>
<tr>
<td></td>
<td>Fenbendazole (10 mg/kg) daily for 5 days</td>
</tr>
</tbody>
</table>

Specific Treatment Recommendations for Foals

Threadworms
- Treat the mare with ivermectin within 24 hours of foaling or
- Treat the foal with ivermectin or oxibendazole (15 mg/kg) if a fecal examination is positive for infection.
- Foals are immune to threadworms when they reach six months old.

Ascarids
- Start treatments with pyrantel pamoate or a benzimidazole (fenbendazole, oxfendazole or oxibendazole; all 10 mg/kg) at 60 days of age.
- Treatment can be initiated at 45 to 60 days if using ivermectin.
- Repeat subsequent treatments at 60-day intervals until the horse is 15 to 18 months old.
- Rotation among benzimidazoles, pyrantel, and ivermectin/moxidectin may be practiced after the foal is six months old.
- Fecal exams should be performed on all (small herd) or at least 10% (large herd) of the juvenile population after each scheduled deworming to monitor continued effectiveness of the control program. Most horses develop excellent acquired immunity to ascarids by the time they reach 18 months of age.

Strongyles
- Control of strongyles can be achieved by using ivermectin or moxidectin (in animals over six months of age) at least once every five months to aid in eradicating large strongyles from the herd.

Pinworms
- Proper implementation of the recommendations for ascarids should achieve effective control of pinworms. Horses develop acquired immunity against adult pinworms about the second or third year of life.
Tapeworms
- After weaning, treat juveniles during spring and/or autumn with a compound containing praziquantel.
- Some horses may develop immunity to tapeworms and some maintain small burdens if not treated.
- About 10% of horses will harbor large numbers of tapeworms for life.

Parasites and Control Practices for Adult Horses

By the time a horse reaches its second birthday, large and small strongyles become the major focus of parasite control programs. Unfortunately, it is common for adult horse parasite control programs to be based on a recipe. This approach needs major revision because this does not allow for determination of dewormer efficacy. The use of a standard rotation formula fails to maximize the efficacy of dewormers and does not account for individual horse susceptibility, nor the many environmental factors. The most effective parasite control programs take into account these specific and very important factors.

It is important for veterinarians and horse owners to change parasite control practices for mature horses because anthelmintic drug resistance patterns are changing, and the number of effective drugs to choose from is decreasing dramatically.

Tapeworms
The most common tapeworms (Anoplocephala perfoliata) have been associated with causing several types of colic, especially ileocecal intussusceptions. Tapeworms can block the ileum and interfere with normal gut motility. The most effective drug for treating tapeworms is praziquantel and should be administered in autumn.

Bots
Botflies (Gasterophilus spp.) common in the United States include Gasterophilus nasalis (lays eggs on hairs under the jaw) and G. intestinalis (lays eggs on the hairs of the forelegs and shoulders). The eggs hatch, and the larvae quickly enter the mouth and burrow into the tissues of the tongue. The larvae attach to the gut wall with mouth hooks and spend up to 12 months drawing nourishment from the stomach lining as they cause gastric ulcers. They are passed down the intestinal tract and into the manure, where they pupate in the soil in late spring. The adult flies then emerge again by mid-summer. These parasites can be managed by using boticidal drugs (e.g., ivermectin or moxidectin) during autumn or early winter.

Large Strongyles
The three major species of large strongyles (Strongylus vulgaris, S. edentatus, and S. equinus) can produce severe gastrointestinal diseases in horses. If ingested, large strongyles migrate in the intestinal cavity (their exact route determined by their respective species), eventually returning to the gut lumen to mature and lay eggs.

Many horse owners have been able to eradicate large strongyles from their herds. Ivermectin, moxidectin and the larvicidal regimen of fenbendazole (10 mg/kg daily for five days) kills adult and migrating large strongyles. Because it takes a minimum of six months to replace a population of reproducing adults, there will be no environmental contamination with large strongyle eggs if all horses on a farm are treated with one of these regimens at intervals of six months or less.

This program works because ivermectin and moxidectin kill all stages within the equine host, scheduled treatments prevent new arrivals from re-contaminating the environment, and time ultimately depletes any potential new infections (larvae) already on pasture. This program will keep large strongyles out of the picture as long as the drugs retain their adulticidal and larvicidal properties against Strongylus spp.

Small Strongyles
Small strongyle larvae invade the wall of the large intestine, where thin, tough capsules form, providing
them with a defense mechanism that makes it practically impossible for the horse’s immune system and dewormers to attack them. Once encysted, the larvae may enter a period of dormancy or continue to develop, depending on how many other small strongyles are already present in the intestine. These larvae eventually emerge and change into adults in the lumen of the gastrointestinal tract and begin to lay eggs.

Small strongyles can be responsible for hemorrhage in intestinal tissues, diarrhea, weight loss, anemia, and protein loss. Another danger is the risk of large numbers of them emerging from the intestinal tissues all at once after the adult population dies off (either due to “old age” or by an effective dewormer). The act of deworming can trigger the next wave of larval emergence from the gut wall within a very short period of time (usually seven to 10 days). This can produce sudden-onset diarrhea, impaired gut motility, weakness, muscular wasting, and serious colic. Horses may die with few outward signs. Larval cyathostomosis can carry a guarded prognosis and is now considered one of the most serious parasite-related diseases in horses, making small strongyles a much more deadly foe than we once thought.

Cyathostomes present the greatest challenge to effective parasite control for adult horses. Their life cycle within the host features extremely persistent larval stages that are not consistently susceptible to any dewormer. Drug resistance has also made certain classes of anthelmintics ineffective against some populations of small strongyles.

Killing adult worms is not the only objective of a parasite control program. This is especially true for cyathostomes, which exert major pathogenic effects before they are susceptible to dewormers. It is the encysted larval stages in the intestinal wall that cause the most damage to the horse, with the worst of these effects being larval emergence from the wall of the intestine into the lumen. In contrast, the adult worms in the intestinal lumen that are shedding the eggs are much less damaging than their immature stages.

The true objective of parasite control is preventing contamination of the environment with eggs. For cyathostomes, the direct source of infection is larvae on pasture, and those larvae develop from eggs deposited by grazing horses. Once strongyle eggs turn into infective larvae, the only factors that can diminish the risk of future infections are hot weather, time, and keeping horses off the pasture. The only practical way to decrease future infection is by limiting the passage of worm eggs by killing female worms before they reproduce. Therefore, our goal is actually to limit the passage of large numbers of strongyle eggs onto pasture.

**Environmental Factors**

When strongyle eggs pass into the environment, their ultimate infectivity is controlled by environmental conditions. In Louisiana, the climate is most conducive for hatching of strongyle eggs and development into infective larvae during autumn and spring. Larvae can survive on pasture for long periods of time in the winter months as well, but in the summer, larval development and survival is poor because strongyle eggs cannot develop into future parasites. Therefore, it is harmless for horses to pass large numbers of strongyle eggs in their feces in summer because those eggs do not survive.

**Host Factors**

Individual horses vary widely in their susceptibility to cyathostome infections, and the majority of the parasites in any group of animals are concentrated in a minority of the animals. Traditionally, all horses have been treated exactly the same to control parasite loads. Current knowledge and drugs make this unnecessary for most horses. This practice is cost inefficient and promotes drug resistance. With timely determinations of quantitative fecal egg counts, the egg shedders, as well as those who do not shed, can be determined.
**Anthelmintic Issues**

Following identification of egg shedders, the expected egg reappearance periods (ERPs) of the various anthelmintic products must be considered. None of the dewormers kill all of the encysted larval stages. Therefore, encysted worms are primed and ready to repopulate the gut lumen. It takes several weeks for the emergent worms to become sexually mature and begin egg laying. This period of time between treatment and when eggs reappear in feces is the ERP, and the ERP differs between drugs. If the time between treatments exceeds the ERP for the drug last administered, then egg shedding onto pasture will occur, guaranteeing that horses will always be at risk of becoming infected.

### Table 3: Expected Egg Reappearance Times for Equine Anthelmintics

<table>
<thead>
<tr>
<th>Anthelmintic</th>
<th>Expected Egg Reappearance Period</th>
<th>Strongyle Contaminative Period</th>
</tr>
</thead>
<tbody>
<tr>
<td>Benzimidazoles (fenbendazole, oxfendazole, oxibendazole)</td>
<td>4 weeks</td>
<td>8 weeks</td>
</tr>
<tr>
<td>Pyrantel salts</td>
<td>4 weeks</td>
<td>8 weeks</td>
</tr>
<tr>
<td>Ivermectin</td>
<td>8 weeks</td>
<td>12 weeks</td>
</tr>
<tr>
<td>Moxidectin</td>
<td>12 weeks</td>
<td>16 weeks</td>
</tr>
</tbody>
</table>

**Management Issues**

If possible, horses should not be fed directly off the ground. Manure collected from stalls or paddocks should be composted for at least several weeks before it is spread on occupied pastures. Pastures should never be harrowed (dragged) while they are occupied by grazing horses, and harrowing should only be performed during the warmest months of the year.

Individual horses differ widely in their contributions to pasture contamination. The relative magnitude of contamination, as measured by EPG, is a repeatable characteristic of individual animals. In herds that have not been dewormed recently, certain horses (approximately 20-30% of the herd) have high EPG, another proportion will have low EPG (30-50%), and the remainder cluster around the average.

Horses with egg counts less than 150 EPG are classified as low contaminators, and those with greater than 500 EPG are classified as high contaminators. The remainder is classified as moderate contaminators.

**Adult Parasite Control Recommendations for Southern Horses**

The objective of a control program is to prevent environmental contamination with strongyle eggs beginning in autumn, and continuing through winter for those horses that are the most serious contaminators. It is advisable to treat with a large strongyle larvicide (ivermectin, moxidectin, or fenbendazole 10 mg/kg for five days) at the beginning (October) and end (March) of each transmission season to facilitate eradication of Strongylus species. Remember that praziquantel should be added to treat tapeworms in October.

### Table 4: Suggested Internal Parasite Control Program for Southern Horses

<table>
<thead>
<tr>
<th>Contaminator Category</th>
<th>Begin Annual Program</th>
<th>Additional Winter Dewormings</th>
<th>Terminate Annual Program</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
<td>October</td>
<td>None</td>
<td>March</td>
</tr>
<tr>
<td>Moderate</td>
<td>October</td>
<td>One*</td>
<td>March</td>
</tr>
<tr>
<td>High</td>
<td>October</td>
<td>Through entire winter*</td>
<td>March</td>
</tr>
</tbody>
</table>

*additional treatments are best administered suppressively (i.e., to coincide with expiration of the Egg Reappearance Period of the previously-used dewormer)*
LSU Equine Artificial Insemination Workshop for Owners & Breeders
February 9-10, 2008

Master the art and science of equine artificial insemination at this two-day workshop designed to provide participants with the knowledge and skills needed to successfully perform artificial insemination with both fresh and cooled semen.

Proper handling and preparation of semen for transport will also be discussed to enable participants to provide this service.

Make reservations early, as space is limited for this educational offering.

Maximum of 21 Participants
Registration Fee:
$325 postmarked by Jan 26, 2008
$350 postmarked by Jan 28, 2008

For More Information:
Call 225.578.9900
or send email to dmccurn@lsu.edu
Veterinarians make vaccination recommendations based on the diseases to which their client’s horse(s) are most likely to be exposed, including tetanus and the encephalitis viruses (Eastern Equine Encephalitis, Western Equine Encephalitis, West Nile Virus, and rabies [in endemic areas]).

In addition, veterinarians will make the recommendation that horses that travel or are exposed to any new horses should be vaccinated for respiratory tract diseases, especially Equine Influenza I & II (Flu) and Equine Herpes Virus (Rhino).

In the southeastern states, horses should be vaccinated at least twice a year for encephalitis viruses (EEE, WEE, WNV) and timing should coincide with one to two months prior to peak periods of exposure (early spring and mid to late summer). In states with four distinct seasons (several weeks or months of below freezing temperatures), vaccination against encephalitis viruses should occur three to four weeks prior to "mosquito season." In addition, vaccination against respiratory diseases should be given at least three to four weeks prior to travel/show/race activities.

Young Horses

Foals should have their first set of vaccinations beginning at about three months of age. It is believed that even very low amounts of passive IgG (colostral immunity required for healthy foal survival) remaining in the foal between three to five months of age may actually interfere somewhat with the foal’s ability to mount an immune response following vaccination. Therefore, booster vaccinations are necessary every four to eight weeks until one year of age. In some areas of the world (e.g., the United Kingdom), veterinarians will recommend waiting until the foal is at least six months of age to begin vaccination for this reason. However, ongoing research into the timing of vaccinations for foals is still under intense investigation.

Vaccinations for young horses (one to three years) that do and do not travel should include vaccinations for the encephalitis viruses (EEE, WEE, +/-VEE, WNV, rabies) and tetanus (tetanus toxoid). Young horses, especially those exposed to any new horses, should also be vaccinated for respiratory tract diseases, especially Equine Influenza I & II (Flu) and Equine Herpes Virus (Rhino). An
additional vaccination against a potentially debilitating and fatal disease that occurs more commonly in young horses in training is against Equine Protozoal Myelitis.

Vaccination against infection with Streptococcus equi equi (the infectious agent that causes strangles), although effective in stimulating a protective immune response, carries the possibility of complications, including fever, anorexia, muscle pain, and abscess formation. This vaccination is often considered for young horses since they are more likely to become infected with moderate to severe forms of the disease. The American College of Veterinary Internal Medicine (ACVIM) does not recommend strangles vaccination in horses that have already been exposed.

**Mature Horses**

Vaccinations for mature horses that do not travel and are not exposed to new horses should still include vaccinations for the encephalitis viruses (EEE, WEE, WNV, Rabies) and tetanus (tetanus toxoid).

Vaccination against infection with Streptococcus equi equi is not usually necessary for mature horses (>3 years old) that are not exposed to young horses.

Horses traveling to other states, regions, or internationally may need to be vaccinated for additional diseases. Owners should contact their local or state veterinarian for specific requirements or recommendations (e.g., horses living in or traveling to states that border Mexico should be vaccinated for Venezuelan Equine Encephalitis). An additional vaccination against a potentially debilitating and fatal disease may include Equine Protozoal Myelitis.

Safe and effective vaccination is now available for potentially debilitating diseases such as:
- West Nile Virus
- Equine Protozoal Myelitis

New technology in the development of intranasal vaccine products is now available for:
- Equine Influenza
- Strangles

Pregnant mares should be vaccinated during the fifth, seventh, and ninth month of pregnancy with inactivated Equine Herpes Virus I vaccine to protect against abortion. Brood mares should have booster vaccinations for tetanus, the encephalitis viruses, and Equine Influenza I & II about one month prior to foaling to ensure adequate antibody levels in the mare’s colostrum.
The 2007 LSU EHSP Stallion Service Auction is now seeking stallion breeding donations which will be auctioned off online to raise funds for the LSU School of Veterinary Medicine.

Specifically, money raised through this auction will help build our new Equine Isolation Unit which will be used for the treatment of horses with infectious diseases.

The breedings to be auctioned off are for the 2008 breeding season. Guaranteed reserves will be honored and your contribution is a tax deductible donation.

To make a donation of a stallion service, contact Ky Mortensen at ssa@vetmed.lsu.edu or call 225-578-9590 for more information.

Online bidding will begin October 15 and will continue through December 15th at our website at www.LSUEquine.com
How to Control Disease Outbreaks on the Farm

Ann Chapman, DVM, MS, DACVIM, visiting assistant professor of equine medicine

It is always unsettling when an owner is faced with a sick horse. However, when an entire barn is infected with a contagious disease, the results can be devastating. Controlling disease epidemics is a constant concern in both human and veterinary medicine. Not all infectious diseases are transmitted horse to horse (e.g., West Nile virus is transmitted by mosquitoes, not directly from horse to horse), but particularly concerning for horse owners are the extremely contagious diseases that spread quickly through a susceptible horse population.

Recent news headlines have described outbreaks of neurological form of equine herpesvirus-1 (EHV-1), Streptococcus equi equi (the causative agent of strangles) and equine viral arteritis (EVA). One of the most important ways to help control a disease outbreak is to develop a plan before a problem arises. Then, when faced with a farm epidemic, particularly of diseases transmitted horse to horse, the guidelines are ready to be implemented and the owner is prepared. A good plan should summarize how the affected/exposed horses will be isolated, what diagnostic tests should be performed, how to clean and disinfect, and how recovered horses will be reintroduced to the herd. The control of disease outbreaks is hard work and not very glamorous. There are no "quick fixes," only quicker resolutions by following established principles.

The following are steps a horse farm owner can take if a contagious disease is diagnosed or highly suspected on the farm.

1. **Establish a biosecurity perimeter.**

A biosecurity perimeter is simply an outline of the area where any horses that have had contact with the original sick horse(s) are maintained. The location of the original sick horse(s) should be identified. This may be a single stall, an entire row of stalls or an entire barn. The biosecurity
perimeter is established by drawing an imaginary boundary that includes all the horses that have had contact with the infected animals. In some cases an entire equine facility, including the pastures, must be included in the biosecurity perimeter.

Once established, the perimeter should be clearly marked, so that everyone who enters the area can take special precautions in handling the infected animals. Brightly colored ropes or contractor’s tape can be purchased from a hardware store and placed to demarcate the perimeter. Signs should be placed at the entrance to the perimeter identifying it as contaminated. Movement of animals in or out of the perimeter should be restricted. Personnel must clean and disinfect their hands or wear disposable gloves, footwear must be scrubbed, and clothing must be changed before moving across the biosecurity perimeter.

2. Institute a biosecurity protocol

a. Horse Isolation: Physical separation of sick and apparently healthy animals is the first step in establishing a biosecurity protocol. Once the perimeter is established, the movement of horses into and out of the area should be stopped. Resident horses must not leave the farm and new horses should not be introduced. Horses with clinical signs of disease should be confined to their stalls or moved to a designated "isolation" area within the perimeter.

Horses that have had contact with sick horses are considered "exposed" and should be contained within the perimeter but away from the sick horses and monitored closely. Although these horses may not show clinical signs of disease, they may be harboring the infectious agent or incubating the disease and should be handled as if they are also infected until proven otherwise.

Horses that have had no contact with the sick horses (do not share a common environment or handlers) may be considered "unexposed." These horses are less likely to be a risk for transmission of disease. These horses should be located outside the biosecurity perimeter in a separate area (secondary perimeter).

b. Horse Handling: Handlers and the equipment they use can transmit infections from horse to horse. Limit human movement between sick and healthy horses to prevent the spread of disease. Ideally, different persons will care for sick and healthy horses. Only essential persons, such as caretakers and veterinarians, should enter the perimeter. If physical separation of horses is not possible, unexposed horses should be handled, fed and cared for first, followed by exposed but healthy horses, and sick horses cared for last. Water hoses should not be immersed in the water buckets since this can transmit infectious agents from bucket to bucket and thus horse to horse. One of the most important practices is to wash hands thoroughly after handling the affected horses. Alcohol based hand sanitizers are also useful to destroying some contagious organisms. Disposable latex gloves can be worn when handling affected animals and should be changed between horses. A footbath containing a disinfectant solution should be placed outside each stall door, so that boots can be dipped and scrubbed when leaving and entering.

Separate stall cleaning equipment should be used in each of the quarantine areas (sick, exposed, unexposed). Disinfect tools, such as rakes, shovels
and wheelbarrows, after each use between stalls. Bedding and manure should never be spread onto pastures. Ideally, manure and bedding would be removed from the farm in an enclosed container, such as a dumpster. Optionally, the material may be composted in a separate area.

c. **Disease Surveillance:** It is important to detect new cases of disease as early as possible so that animals can receive appropriate treatment, but also so that they can be further isolated from other "healthy" horses. Fever is often an early sign of the onset of infectious disease. Rectal temperature should be taken twice daily on all the horses on the premises. The normal rectal temperature for horses is 99° – 100.9° F. Rectal temperatures above 102° F represent a fever and should be of immediate concern. The veterinarian can advise the owner of what clinical signs are specific to the disease of concern. For example, fever, loss of appetite, nasal discharge and lymph node enlargement are early signs of equine strangles. Whereas incoordination, urine dribbling, and recumbency may be signs of neurologic diseases, such as equine herpesvirus. Additional diagnostic testing may be performed by a veterinarian to confirm the diagnosis in a sick horse, or to identify carrier animals.

d. **Disinfection and Control Measures:**
Cleaning of the facility is important to limit the spread of disease both during the outbreak and before the reintroduction of healthy horses.

A good rule of thumb is that if it doesn’t LOOK clean, it’s not clean. NO disinfectant is effective in the presence of manure, shavings or dirt! One of the first and most important steps in the cleaning process is to remove the organic material. First rinse all the surfaces with water. Next, scrub hard surfaces (e.g., stall walls, concrete flooring and ceilings, if possible) with powdered laundry detergent using a stiff bristle brush until they are clean; then rinse and allow them to dry. Pressure washing should be avoided since it may aerosolize the disease-causing agents and actually result in the spread of disease. Finally, after surfaces are clean, a disinfectant should be applied to all the clean surfaces and allowed to dry.

A veterinarian can make suggestions as to which disinfectant is suited for a particular infectious agent; however, diluted bleach (one part bleach to nine parts water) is inexpensive and generally effective for many organisms. Do not mix different disinfectants since toxic chemical reactions can occur. Protective clothing, such as disposable painter’s coveralls, latex gloves, face masks and safety eyeware should be worn during cleaning.
All the equipment, such as feed buckets, water tanks, gates, grooming supplies and lead ropes should be cleaned, disinfected with something like diluted bleach solution, then rinsed with fresh water after disinfection to remove any chemical residues. Horse trailers may also become contaminated and should be disinfected between uses. Pastures pose a particular problem, since cleaning and chemical disinfection are obviously impossible. Fortunately, time and sunlight resolve most problems. A veterinarian can make recommendations as to how long a pasture should remain vacant.

Pest control is imperative, since rodents, birds and insects (e.g., horse flies, black flies, mosquitoes) can carry some disease agents from horse to horse. Dogs, cats, goats, chickens and other "pet" animals may need to be removed from the perimeter during a disease outbreak, since they may also travel from stall to stall, carrying organisms on the hair coat and feet.

Administration of vaccines to sick or exposed horses is NOT recommended, since they are probably already infected, and there is the potential for medical complications. Protection following initial vaccination is not immediate and may take several weeks to be effective in disease prevention. Administering a booster vaccine to healthy exposed horses that have been vaccinated in the past is suggested with some diseases; however, this is not a substitute for good management procedures, such as quarantine and disinfection.

3. Release of Animals
It can be difficult to decide when to give the "all clear" regarding release of quarantine, but 21 to 28 days after the last disease case is a useful guideline. In some outbreaks, state or federal veterinarians must release the quarantine. In other instances, the veterinarian and farm owner develop a plan based on the characteristics of a particular organism, such as strangles.

4. Communication
Above all, the most important factor in controlling a disease outbreak is effective communication between the farm owner, the horse owner and the veterinarian. Finger-pointing and laying blame are counter-productive in the management of disease. Everyone must understand the rules that have been established and be willing to comply. In this way, the potentially devastating effects of a disease outbreak can be minimized.
The lessons learned by the agricultural community since the hurricanes of 2005 have been many. In particular, the development and effectiveness of a statewide response team to address and prepare for a multitude of potential emergency situations has come to the forefront as the leader in animal emergency response. Welcome to LSART - the Louisiana State Animal Response Team.

LSART is a public/private partnership, joining government agencies, humane organizations, agricultural organizations and the Louisiana Veterinary Medical Association with business partners around the common goal of dealing with animal issues during disasters. In addition to the LVMA, member groups include the LSU Equine Health Studies Program, the Louisiana Cattlemen’s Association, Louisiana Tech University, the LSU Agricultural Center, the LVMA Equine Committee Foundation, the Louisiana Equine Council, the LSU Fire and Emergency Training Institute, and the Louisiana Department of Agriculture and Forestry.

In 2006 and 2007, the Team worked statewide to promote emergency readiness and to train personnel interested in volunteering for a wide variety of efforts that will serve to safeguard the state’s public and private agricultural interests in the event of a natural or man-made disaster.

These activities include:
- Held regular meetings with LDAF
- Assisted Louisiana parishes with evacuation, sheltering, and planning
- Participated in community preparedness presentations
- Authored emergency planning resources for horse owners
- Gathered supplies for equine sheltering for locations throughout the state
- Identified equine veterinary medical teams lead by LVMA equine veterinarians
- Participated in the first LSART Summit bringing together over 150 people representing government agencies, non-government organizations, equine-interest groups, producer groups, agriculture organizations and independent volunteers to identify both the resources and gaps for our state with regard to animal emergency planning issues
- Partnered with the LSU Equine Health Studies Program Team to provide assistance with future events requiring 1) equine shelter veterinary medical support, 2) equine field veterinary medical hospital support services, 3) equine search and rescue veterinary medical support, and 4) a disaster response surge hospital (on-site at the LSU School of Veterinary Medicine campus).
- Will hold a Technical Large Animal Emergency Rescue (TLAER) Training Course in October 2007 for Louisiana first responders, veterinarians, and animal care authorities
- Developed a course with the LSU School of Veterinary Medicine entitled “The Role of the Large Animal Veterinarian in Community Disaster Response” for the professional curriculum
- Partnered with the LSU AgCenter to promote the Hay Hotline
- Partnered with Louisiana Tech University to train and provide equine sheltering and response for local, regional, or state emergency needs.
LSART is guided by district representatives throughout the state.

- District 1 - Dr. Neil Henderson
- District 2 - Dr. Chris Sullivan
- District 3 - Dr. Justin Gregg
- District 4 - Dr. Harry Kleinman
- District 5 - Dr. Shannon Gonsoulin
- District 6 - Dr. Becky McConnico
- District 7 - Dr. Jay Addison
- District 8 - Dr. Allison Barca
- District 9 - Dr. Becky McConnico

To view a map of the state divided by district, go to www.lsart.org.

Among other efforts that LSART has developed has been the implementation of an emergency planner for horse owners. The planner includes specific information about maintaining yearly equine herd health needs, preventing an infectious disease outbreak, maintaining a workable equine evacuation plan, a shelter in place plan and identifying the most common risks for equine disasters in the state of Louisiana.

Some of the most valuable resources one can have in the event of an emergency are necessary contacts to address a given situation, including local authorities:

Local and LSU veterinarians - 225/578-9590
Louisiana State Veterinarian’s Office - 225/925-3980
LSART - 800/524-2996

Additional information and a variety of resources on emergency planning for animals in a disaster can be found at the following links:

www.LSART.org - Louisiana State Animal Response Team website - Shelter locations, response, trailering, and situation updates, etc.

www.LSUEquine.com - LSU School of Veterinary Medicine, Equine Health Studies Program
The extraordinary efforts of globe-trotting surgeons, dedicated LSU veterinarians and technicians, and a determined team of horse owners recently combined to preserve the sight of one 13-year-old Dutch Warmblood mare through a procedure known as a vitrectomy. The surgery is rarely performed and was unprecedented at Louisiana State University’s School of Veterinary Medicine.

The horse, Lexius (Lexi), had an infection in the vitreous that caused chronic inflammation and uveitis in both eyes. The most likely cause of the infection is the bacteria leptospirosis. Uveitis is the most common inflammatory change to the uvea of the horse and can affect up to 12% of the population. It is the main cause for the blinding of horses. Lexi also has a detached retina in her left eye. When Lexi was first presented at the LSU School of Veterinary Medicine, Bob Gardes of Lafayette, La., was trying her out as a competition horse when a pre-purchase exam uncovered a recent problem with her eyes. Bob called his friend Julie Calzone who had known the horse for many years, and the two of them set up a consultation and exam with Dr. Storey.

At that time, Dr. Storey diagnosed Lexi with uveitis in both eyes and a detached retina in the left eye. “It took Bob and I less than a minute to shake hands and agree to take joint ownership of Lexi,” said Calzone. “Someone has to help the horse,” said Gardes. “She can’t speak for herself.” The two new owners were given three treatment options by Dr. Storey. “First, we could treat the symptoms,” said Dr. Storey. “The horse would still go blind, but it would be delayed. Second, we could give the horse cyclosporine A implants, which are placed between the sclera and the uveal tissue. The implants slowly release cyclosporine to eliminate the inflammation and fight the infection. Third, we could perform a vitrectomy, where the gel behind the lens and in front of the retina is removed and replaced with intravenous fluid.” Bob and Julie opted for the third treatment along with a grant to pay for the procedure and whoever needed to be there for the surgery.
“We have long suspected that leptospirosis caused uveitis in most cases,” continued Dr. Storey. “Dr. Gerhards is the first person to effectively prove that in clinical cases. He removes the vitreous, cultures it and conducts a polymerase chain reaction (PCR) test to look for DNA of the bacteria. He has shown that the bacteria are present in a high number of cases.” Cyclosporine implants are successful because they suppress the inflammation and possibly the growth of the bacteria, but the results are not permanent; removing the vitreous gel entirely potentially offers a life-long cure. “Removal of the vitreous and antibiotics in the IV fluid help prevent recurrence in many horses,” said Dr. Storey.

According to Dr. Storey, vitrectomies have been frequently performed in Germany since the 1990s and seem to offer a life-long cure. The LSU School of Veterinary Medicine is equipped to perform the procedure, but no one at the School had performed the procedure in horses. “The only person in the world who has performed this procedure many, many times is Dr. Hartmut Gerhards in Germany,” said Dr. Storey. “We called and asked him to come perform the surgery.” Dr. Gerhards performed the surgery with his assistant, Dr. Wollanke, and Dr. Storey. Dr. Gerhards brought some specialized equipment with him, specifically a handpiece and a vitrectomy base unit that runs it. The surgery took approximately one and one-half hours, and Lexi is doing well months after surgery. While vitrectomies are performed regularly in Germany, they are rarely performed in the United States. This is the first time this procedure has been performed on a horse at LSU. The momentum of the team wouldn’t end with a single horse, however.

Through the generosity of owners Ms. Julie Calzone and Mr. Bob Gardes, both of Lafayette, La, the field of equine ophthalmology will see a difference at LSU for years to come. Following on the heels of an international team effort to help one horse, a new fund has been established within the LSU Foundation to bring focus to the wonders and intricacies of the care of the equine eye. The Lexi Fund, named for Julie and Bob’s mare “Lexius,” has been implemented to dedicate financial resources toward clinical service, scientific investigation and educational endeavors in the field of equine ophthalmology.

“The idea for the fund came to fruition over the past several
months as Bob and I continually worked with LSU to find answers for Lexi’s vision,” said Calzone. “We have those answers now, and we felt like there were so many other horses out there that could benefit from the success of Lexi’s story.” Lexi came to LSU’s Equine Hospital on September 22 to undergo surgery to correct her failing sight. Dr. Hartmut Gerhards with the Clinic for Horses of Ludwig-Maximilians University of Munich, Germany, worked collaboratively with Dr. Eric Storey, assistant professor of ophthalmology at the LSU School of Veterinary Medicine, to perform the vitrectomy on Lexi’s right eye. Assisting Dr. Gerhards was Dr. Bettina Wollanke of Munich.

“Both Bob and I feel very strongly that Lexi called all the shots including picking Dr. Storey and LSU,” said Calzone. “We knew we were chosen to stand by her while she led the way for a new life and new eye sight, not only for herself but for other horses in North America. She is a very special horse, and we all are fortunate that she chose us. Needless to say, if it weren’t for Dr. Storey and LSU none of this would have been possible.” Through a perfectly choreographed surgery and now a permanent fund, Lexi is leading the way for all horses affected with ophthalmologic conditions.

In May, “The Lexi Suite”, a stall in the Equine Intensive Care Unit, was dedicated at the LSU Large Animal Hospital in honor of Lexi. The dedication was attended by horse enthusiasts from around the state, members of the faculty and staff of LSU’s Equine Health Studies Program. “The event was a celebration of Lexi’s journey and the remarkable efforts of all that were involved in her recovery, and a formal recognition of the incredible philanthropic support that has been demonstrated by her owners, both in their willingness to implement The Lexi Fund, and in additional private support as well” said Dr. Eric Storey, Lexi’s first ophthalmologist at LSU.
LSU Veterinary Students Summer Research Scholars in Equine Reproduction

LSU Veterinary students, Tina Miletello and Brenna Hanly, worked synergistically on two separate research projects this past summer as part of the Equine Theriogenology department within the Equine Health Studies Program at LSU’s School of Veterinary Medicine. Their projects were presented as part of the LSU School of Veterinary Medicine’s annual Phi Zeta Research Emphasis Day on September 26.

Phi Zeta is a national Veterinary Honor Society, the object of which is to recognize and promote scholarship and research in matters pertaining to the welfare and diseases of animals. The goal of Phi Zeta Research Emphasis Day is to promote research in veterinary medicine, to recognize the research being conducted by our veterinary students, residents, graduate students and faculty, and to encourage veterinary students to pursue careers in veterinary research. The Tau Chapter of Phi Zeta was installed on March 30, 1977, at LSU. Phi Zeta is the abbreviation of the Greek word Philozoi, which means “love of animals.”

Miletello’s project focused on equine endometritis and the evaluation of low volume uterine lavage for diagnostic purposes. Endometritis is a major cause of infertility in mares and an accurate diagnosis of bacterial infection requires accurate interpretation of both false positive and false negative results. Miletello, along with her team, hypothesized that using a small volume uterine lavage would improve the efficiency of bacterial recovery from chronically infected mares and result in fewer false negatives, as well as result in fewer false positives from reproductively normal mares, than a traditional swab technique. A complete abstract of her findings has been submitted to Phi Zeta for review by an expert panel.

Hanly’s project was entitled: “Ovulation in the mare: Time of day of ovulation following human chorionic gonadotropin administration at 8AM vs. 8PM.” Along with the help of her colleagues and oversight by LSU veterinarians who are Board-certified in Theriogenology, Hanly delved into the study of the effects of the HCG administration on mares depending on the time of day that it is administered. Mares have a variable period of estrus lasting five to seven days that usually ends one to two days following ovulation. A previous study by this group found that ovulation time in mares is circadian and is most likely to occur between 4:00 p.m and midnight.

Breeding close to ovulation improves pregnancy rates. The ability to time insemination to coincide with ovulation is beneficial when breeding to stallions that are in high demand or have reduced fertility, and is specifically needed when using fresh chilled shipped semen. It is also essential when using frozen semen. Hanly’s project was also submitted via abstract to Phi Zeta for review and judging.
The Equine Clinic offers veterinary medical services 365 days a year. For information on our services, go to www.LSUEquine.com or call 225/578-9500.

Equine Hospital House Officers

2007 Interns and Residents

Dr. Amanda Curling
Intern - Equine Medicine & Surgery
Clinical Interests include Neurology and Neonates.
DVM - Ross University
Hometown - Herndon, Virginia

Dr. Timm Judehus
Resident - Equine Surgery - Clinical interests include orthopedics and imaging diagnostic modalities. Med Vet - Lutwig Maximillian’s University, GER. Hometown - Munich, Germany

Dr. Lisa Kivett
Intern - Equine Medicine & Surgery
Clinical interests include medicine, laminitis, endocrinology, and theriogenology.
DVM - North Carolina State University
Hometown - Kinston, North Carolina

Dr. Andrew Lewis
Resident - Equine Surgery
Clinical interests include orthopedic surgery and upper respiratory surgery.
DVM - Louisiana State University
Hometown - Pineville, Louisiana

Dr. Simon Staempfli
Resident - Equine Practice
Clinical interests include equine sports medicine and theriogenology.
Med Vet - Vetsuisse Faculty, University of Berne, CH. Hometown - Berne, Switzerland

Dr. Jessica Thompson
Resident - Equine Internal Medicine
Clinical Interests include ophthalmology, ultrasound, neurology and neonates.
DVM - Texas A & M University
Hometown - Fort Worth, Texas

Dr. Jose Len
Resident - Theriogenology
Clinical interest is in Equine Theriogenology
MVZ - Universidad de Guadalajara, MEX
Hometown - Panama City, Rep. of Panama

For up-to-date information about the EHSP, go to www.LSUEquine.com.
The Giving Tree
Ky Mortensen
Director of Advancement

You probably read it when you were young, or you’ve read it to your own children at some point, but there’s a wonderful story out there by Shel Silverstein called The Giving Tree. Originally published in 1964, the story is that of a young man who loves to climb a favorite tree and the tree loves the boy in return. Time passes, the young man changes with age, but the tree remains the same; always happy to see him and continually giving of herself to make the boy happy. She gives her leaves, apples, branches, and more until eventually she has given everything and is reduced to a mere stump. In the final page of the story, the young boy (now an old man) sits down to rest himself on the stump and the tree is happy again. The boy was never really happy, as he didn’t exactly have the added benefit of reading the story beforehand, and he spent his entire life wishing and wanting and taking the most precious things for granted.

Why the story of the tree? Because life is so full of giving and taking and the point of the story smacks so evident in countless ways everyday. Applied to horse health, veterinary medicine, and the equine industry; it reminds me of how small I am in the grand scheme of things. Not in a bad way, but in a manner of appreciation. I think back on the day that horses first entered my life. What they have given me and what I have taken.

Horses are so similar to the tree. They give, period. They race, they rein, they jump and they run around barrels. They hold a calf steady at the end of a rope so we can do our work, or compete for the quickest time. They pull sulkies and wagons and occasionally even babysitting duty. The list goes on and on. Horses are givers.

I think the art and science of veterinary medicine is one way of giving back. At LSU we strive every day to give back to that tree. We stretch tight budgets and campaign for funds so that we can have the very best equipment and facilities to treat your horses and train the next generation of horse doctors to be the best in the land. We research diseases in the hope of better treatments and cures so that future horses and horse lovers won’t have to battle them. And we work with you, the horse owner, and with your horses every day in our hospital to find answers to specific health related problems.

As an equine enthusiast, your choice to support the efforts of the LSU School of Veterinary Medicine or any other equine organization is one that should be made with your own horse in mind. Whether you bring your horse to our hospital in its time of need or make a donation toward the advancement of our programs, it is the horse that ultimately benefits from your actions. Through the teaching experience and detailed clinical evaluations, it is the horse that reaps the reward, both individually and collectively.

I would challenge you to consider this the next time your horse needs medical attention. Think about it when you consider whether or not to mail in a contribution. Think about it when your daughter and her horse bring home another ribbon or when your horses’ nose hits the wire at the track. Your willingness to give something back is the very thing that moves the horse forward. A gesture of giving in the present will extend well into the successes of the future. It is an investment in your horse today and in that of so many horses tomorrow. It’s giving back to your tree.
The LSU Equine Health Studies Program would like to thank the following for their generous support of our programs throughout 2007.

Ms. Robin J. D’Andreamatteo
Black Star Farm & Stables Inc.
Mr. Walter R. & Mrs. Barbara Bogan
Dr. Mark G. Barry
The Biedenharn Family Foundation
Dr. Edward C. Boldt, Jr.
Mr. Ralph L. & Mrs. Linda Boswell
Mr. Paul E. Burton
Ms. Beth L. Busbice
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Dr. Barbara Thompson
Dr. Christopher H. Thompson
Mr. Carl Tuttle
Mr. James & Mrs. Dorothy Whitaker
Ms. Adrienne Willett
Ms. Tammie M. Wright
Mrs. Melinda M. Wright
Scientific Publications


Abstracts and Proceedings


Sod GA, Hubert JD, Mitchell CF, Martin GS, Gill MS. An in vitro biomechanical comparison between AO cortical bone screws with teflon tape wrapped threads and ao cortical bone screws without teflon tape wrapped threads for a limited contact dynamic compression plate fixation of osteotomized equine third metacarpal bones. Veterinary Comparative and Orthopedic Traumatology. 20(2), A38, 2007.

Steib C, Truax R, Lomax L, Venugopal


**Presentations**


Burba DJ: Update on Cribbing Surgery. LSU School of Veterinary Medicine, Annual Spring Conference, Baton Rouge, LA. March, 2006.

Burba DJ: Prevention and Treatment of DJD in horses. LSU School of Veterinary Medicine, Annual Spring Conference, Baton Rouge, LA. March, 2006.


Eades SC, Stokes AM, Johnson PJ, LeBlanc CJ, Ganjam VK, Buff PR, Moore RM: Endothelin-1 immunoreactivity, insulin, glucose, and platelet-neutrophil aggregates in horses administered carbohydrate

7th ANNUAL LSU STALLION SERVICE AUCTION

The 2007 LSU EHSP Stallion Service Auction is now seeking stallion breeding donations which will be auctioned online to raise funds to help build our new Equine Isolation Unit.

The breedings to be auctioned are for the 2008 breeding season.

To make a donation of a stallion service, contact Ky Mortensen at ssa@vetmed.lsu.edu or call 225-578-9590

Help build the next generation of Equine Health in Louisiana.


McConnico RS: Invited participant (break-out session participant) representing the LVMA & LSU-SVM. AVMA Disaster Summit, Arlington (Crystal City), VA. May, 2006.

McConnico RS: Short presentation on the Louisiana Response to Hurricane Katrina as part of Creating the Gumbo of Progress, The National Veterinary Scholar Symposium sponsored by Merck/Merial, Baton Rouge, LA. Aug, 2006


Paccamonti, DL: Manejo del ciclo estral de la yegua, Consifuiendo mejores resultados usando semen fresco, Manejo de la yegua para inseminar con semen congelado. 7th Curso de Actualizacion in Clinica y Reproduccion Equina y 1st Curso Internacional de Diagnostico por Imagen, Universidad Nacional Autonoma de Chiapas, Tuxtla Gutierrez, Mexico, September, 2006.


Stokes AM. The Current Status of Women in Research and Academia. LSU School of Veterinary Medicine Student Chapter of the American Association of Women Veterinarians,

Stokes AM. Becoming an equine researcher – the journey. Beta Beta Beta Biological Sciences Undergraduate Honor Society, Baton Rouge, LA, October 2006.


Lay Articles


Navarre CB, McConnico RS. Disaster Readiness for Horse Owners, Disaster Information Resources. LSU Ag Center. www.lsuagcenter.com, April 2006.

Grants and Contracts

Hanley B, Paccamonti D. Time of ovulation after hCG administration in mares. Morris Animal Foundation summer research program. $5000.


Overby A, McConnico RS. Citizens Animal Rescue and Evacuation (CARE) project based within the Animal Science Department at Louisiana Tech University with ULS. $9,753.

Poirrier R, Foil C, McConnico RS, Adcock R. Louisiana State Animal Response Team as part of the LVM received funding for State Animal Response Team Summit, a 2 day planning event aimed at training and resource organization. Funded by Petsmart Charities & Louisiana Veterinary Medical Association. $40,000.

Venugopal CS, Beadle RE, McConnico RS, Adcock R. Louisiana State Animal Resposne Team received funding for State Animal Response Team Summit, a 2 day planning event aimed at training and resource organization. Funded by Petsmart Charities & Louisiana Veterinary Medical Association. $40,000.

Poirrier R, Foil C, McConnico RS, Adcock R. Louisiana State Animal Resposne Team received funding for State Animal Response Team Summit, a 2 day planning event aimed at training and resource organization. Funded by Petsmart Charities & Louisiana Veterinary Medical Association. $40,000.

Venugopal CS, Beadle RE and Moore RM. Role of vanilloid receptors in summer pasture-associated obstructive pulmonary disease (SPAOPD) in horses. EHSP, $11,288.

Awards

Dr. Dale Paccamonti was elected as member of International Equine Reproduction Symposia Committee

Dr. Changaram S. Venugopal received the Merit Teaching Award May, 2007, Honor roll

Dr. Changaram S. Venugopal completed 25 years of service at LSU, May 2007


Dr. Ashley Stokes. Named to Forum 35 Board of Director (~600 member young professional Baton Rouge org), December 2006.

Dr. Martin Vidal received The Annual Resident Award, American Association Of Veterinary Clinicians, 2007

The second annual Storm Cat Career Development Award has been presented to Dr. Martin Vidal of Louisiana State University. The $15,000 grant is designed to give an early boost to an individual considering a career in equine research and is funded by a personal donation from Grayson-Jockey Club board member Lucy Young Hamilton. It is named in honor of the internationally renowned stallion Storm Cat, which stands at Mrs. Young’s family farm, Overbrook Farm in Kentucky. Dr. Vidal’s study addresses certain stem cells, i.e., bone marrow and adipose tissue cells. These stem cells are believed to have potential for treating tendonitis, bone and joint problems, etc. The aims of the project include determining optimum culture conditions for these cells and assessment of cell migration and survival.

Dr. Martin Vidal received the third place award for poster presentation (PhD Graduate Student Category) Phi Zeta Research Emphasis Day 2006 (Chapter Tau).

Other Important Information

If pictures paint a thousand words, imagine how powerful they can be when diagnosing an illness or injury in your horse. Detailed state-of-the-art images of practically any organ, blood vessel or nerve in crisp, clean pictures.

Imagine the possibilities. Magnetic Resonance Imaging (MRI) can make this happen.

To learn more about the goal to have a Veterinary MRI at LSU, please contact Ky Mortensen at 225.614.7714.

Imagine the difference you can make.